

NOUVELLES TABLES
D'INTEGRALES DÉFINIES,

PAR

D. BIERENS DE HAAN,

MEMBRE DE L'ACADÉMIE ROYALE DES SCIENCES D'AMSTERDAM.

EDITION OF 1867 — CORRECTED

with an English Translation
of the Introduction by

PROFESSOR J. F. RITT

Columbia University



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S A M A J E S T É,

LE ROI DES PAYS-BAS, GRAND-DUC DE LUXEMBOURG, ETC., ETC., ETC.,

G U I L L A U M E III,

PROTECTEUR

DE L'ACADÉMIE ROYALE DES SCIENCES D'AMSTERDAM.

PRÉFACE	page	ix.
DIVISION DES TABLES	"	3, 4.
SOMMAIRE DES TABLES	"	5—21.
ABRÉVIATIONS DANS LES TITRES DES TABLES	"	22.
ABRÉVIATIONS ET ADDITIONS	"	22—24.
PARTIE PREMIÈRE	"	25—118.
PARTIE DEUXIÈME	"	119—374.
PARTIE TROISIÈME	"	375—491.
PARTIE QUATRIÈME	"	493—682.
PARTIE CINQUIÈME	"	683—698.
ADDITIONS	"	699—716.

P R E F A C E

T O

O R I G I N A L E D I T I O N O F 1 8 6 7

Les Tables d'Intégrales Définies, — formant le Volume IV des Mémoires de l'Académie Royale des Sciences d'Amsterdam, qui a paru en 1858 — ont été épuisées en peu de temps. C'est avec reconnaissance et quelque peu de fierté, que j'attribue ce succès inespéré à l'accueil tout favorable fait à une entreprise scientifique, première en son genre, tant par divers corps savants que par les journaux scientifiques de l'étranger.

Mais dès-lors je dus songer à une nouvelle édition. Or, pour celle-ci je pouvais profiter de l'expérience acquise par la première, ainsi que des remarques faites par quelques savants bienveillants. En outre, j'avais publié dans l'intervalle quelques mémoires contenant des systèmes nouveaux de ces formules. Et surtout, notre Académie avait fait imprimer en 1862 le Volume VIII de ses Mémoires, renfermant mon „Exposé de la théorie, des propriétés, des formules de transformation et des méthodes d'évaluation des intégrales définies.”

Il était indispensable, vu l'accumulation des matériaux, de simplifier autant que possible le but qu'on se proposait, et le chemin qui devait y conduire. Il fallait, en général, supprimer les intégrales superflues; en outre il semblait nécessaire d'omettre les notices littéraires.

Comme intégrales superflues, j'ai omis en premier lieu les intégrales déjà connues comme indéfinies, et qui ne tombent dans aucun cas de discontinuité. Ensuite, on pouvait négliger celles qui; par des considérations particulières, pouvaient se réduire aisément à d'autres intégrales. Ainsi, celles où la fonction à intégrer est paire ou impaire, sont données seulement pour les limites 0 et 1, 0 et ∞ , ou 0 et $\frac{1}{2}\pi$, 0 et π , non pour celles -1 et $+1$, $-\infty$ et $+\infty$, ou $-\frac{1}{2}\pi$ et $+\frac{1}{2}\pi$, $-\pi$ et $+\pi$. Celles où la fonction ne change pas par une substitution de la

valeur inverse de la variable, ne sont données que pour les limites 0 et 1, les intégrales entre les limites 1 et ∞ , 0 et ∞ , pouvant aisément se déduire de celles-ci. De même dans les intégrales où il faut intégrer une fonction de $\sin x$ seulement, le *sinus* est changé en *cosinus* par la substitution $x = \frac{\pi}{2} - y$; ces dernières intégrales sont omises en général.

De cette manière on obtenait déjà une véritable simplification; restait encore à supprimer les notices littéraires. Or, celles-ci avaient un double but: celui de donner un coup d'œil sur l'état actuel et sur l'histoire de la science; en second lieu, celui de tenir lieu de démonstration, puisqu'on y renvoyait aux sources elles-mêmes. Donc, en renonçant à ces notices, il fallait absolument y suppléer d'une autre manière, puisqu'il est nécessaire avant tout que chacun, s'il le désire, puisse s'assurer lui-même de la validité du résultat donné.

J'ai cru pouvoir satisfaire à ces diverses conditions par les considérations suivantes.

Le Volume VIII des Mémoires de l'Académie, mentionné ci-dessus, contenait, conformément à son but, la déduction d'une partie des intégrales du Volume IV; et, de plus, un certain nombre de formules nouvelles. Pour l'évaluation de ces intégrales on pouvait se contenter de citer le passage correspondant du Volume VIII; en outre, soit dans cette discussion, soit dans le renvoi vers le Volume IV, on trouvait tout ce qui était légitimement à désirer sur les sources, où chaque intégrale était traitée. J'ai donc commencé par admettre toutes les formules trouvées dans le Volume VIII; elles sont notées ainsi (VIII,...), le second nombre indiquant le numéro de la page à consulter.

Autour de ce noyau pouvaient se grouper les divers systèmes de formules mentionnés ci-dessus, et qui se trouvent soit dans les Mémoires ou les Comptes-Rendus de notre Académie, soit dans ceux de la Société des Sciences à Harlem, soit dans les Archives publiées par une Société mathématique à Amsterdam, sous la devise: „Een onvermoeide Arbeid, etc.” Ces mémoires sont cités (voir les Abréviations etc. page 22 et 23), avec addition de la page quelquefois, dans le cas où le mémoire en question a un trop grand volume, pour que la recherche de l'intégrale y soit aisée. Quant au mémoire noté (H)., il est nécessaire, pour une juste appréciation de l'histoire de la science, d'observer ici que quelques-unes des formules qu'on y rencontre, avaient déjà été déduites auparavant par l'illustre C. J. Malmsten, dans les Nouveaux Actes d'Upsala, T. XII. p. 171.

Ensuite de ce corps de formules il était permis de déduire par des méthodes simples d'autres intégrales définies, méthodes, soit d'addition et de soustraction, soit de substitution d'une nouvelle variable, soit de l'application d'une intégration partielle, dont j'ai traité dans le Volume II des Mémoires de l'Académie. Je les ai employées principalement là, où cette extension me semblait

désirable pour compléter le cadre. Tout comme dans le Volume IV, ces résultats sont indiqués ainsi (V. T...., N...), sans qu'on ait jugé nécessaire de signaler la méthode de déduction; vu que, d'un côté, cette indication aurait pu prendre beaucoup de place, ce qui était contraire au but; et que, d'autre part, on peut toujours aisément y suppléer soi-même par l'inspection et la comparaison du résultat obtenu et de la formule citée.

Mais il ne m'a pas été possible de comprendre dans ce système, déjà suffisamment développé, toutes les formules qui étaient à transcrire des tables originelles du Volume IV, ni toutes celles que je rencontrais encore par-ci et par-là. A l'égard de ces dernières intégrales il était donc nécessaire de procéder de la même manière que dans le Volume IV; c'est-à-dire d'ajouter pour chacune d'elles une notice, contenant le nom de celui qui l'a déduite, et l'ouvrage, où l'on en peut trouver l'évaluation. Quant aux premières, il suffisait de renvoyer vers le Volume IV, avec la page à consulter, ainsi (IV, ...).

C'est ainsi que le but s'est trouvé restreint à ne donner, en général, que la valeur des intégrales définies. Quant à ceux qui veulent étudier les sources, ils devront, lorsqu'elles ne sont pas mentionnées, passer par le Volume VIII au Volume IV, ou directement à ce dernier, où ils pourront trouver ce qu'ils désirent.

Le mode de rédaction maintenant employé, c'est-à-dire sans ajouter, en général, des notices littéraires aux intégrales admises, fournissait encore un autre moyen de rendre le coup d'œil plus commode, en resserrant les Tables. Ce moyen consistait à imprimer deux formules sur une même ligne, lorsqu'il y avait assez de place. En économisant ainsi l'espace d'une page, on a diminué en même temps quelque peu l'étendue de l'ouvrage, sans que pourtant l'examen facile des formules ait eu à en souffrir.

Nous allons voir que cette simplification était bien nécessaire pour ne pas grossir le volume outre mesure, et en rendre par-là-même l'usage difficile et incommode.

Les anciennes Tables (Volume IV des Mémoires etc.) contenaient environ 7300 formules, dont environ 4200 ont été admises dans ces Nouvelles Tables. Ce nombre s'est accru jusqu'à 8939, dont 2620 se trouvent évaluées dans l'Exposé (Volume VIII) et 1272 autres dans l'une ou l'autre de mes notes, dont il a été fait mention plus haut. J'en ai rencontré encore 386 soit dans des ouvrages qui ont paru plus tard que 1859, soit dans d'autres que je n'avais pu consulter auparavant. Pour 1015 autres j'ai dû me contenter de renvoyer au Volume IV, les anciennes Tables elles-mêmes. Enfin il s'en trouve encore un nombre de 3086, qui ont été déduites de ces premières formules, par quelque une des méthodes mentionnées précédemment. On en pourra le mieux juger par l'inspection des données suivantes.

Section.	Tables.	Renvois au		Formules trouvées dans des mémoires		Formules déduites.	Total des formules.
		Vol. VIII.	Vol. IV.	de moi.	d'autres auteurs.		
1	1-25	932	82	—	13	103	430
2	26-29	20	15	—	6	25	66
3	30-33	13	3	—	1	33	50
4	34-75	298	119	134	66	254	871
5	76-78	14	4	—	—	11	29
6	78	—	4	—	—	1	5
Partie I.		577	227	134	86	427	1451
en raison de		40	16	9	6	29	pour 100
7	80-105	106	126	—	17	219	468
8	106-148	214	122	—	104	362	802
9	149-228	571	191	648	41	224	1675
10	229-254	97	3	—	3	334	437
11	255	8	—	—	2	1	11
Partie II.		996	442	648	167	1140	3393
en raison de		29	13	19	5	34	pour 100
12	256-260	14	11	—	1	50	76
13	261-281	105	84	—	33	105	327
14	282	3	—	—	1	6	10
15	283	5	—	—	—	1	6
16	284-338	154	62	31	6	721	974
17	339	2	—	—	—	8	10
18	340	6	1	—	—	2	9
19	341-349	41	4	—	3	74	122
20	350, 351	16	5	—	3	1	25
Partie III.		346	167	31	47	968	1559
en raison de		22	11	2	3	62	pour 100
21	352-360	21	26	—	9	55	111
22	361-398	120	76	292	24	82	594
23	399	7	10	—	—	6	23
24	400	5	—	—	1	—	6
25	401-434	181	35	128	18	170	532
26	435-443	3	2	5	—	111	121
27	444	1	—	—	—	4	5
28	455-459	164	6	27	6	29	232
29	460-465	93	—	—	—	—	93
30	466	12	—	—	—	—	12
31	467-471	—	8	—	3	45	56
32	472	2	—	—	3	6	11
33	473	4	—	—	—	5	9
34	474	5	—	—	—	2	7
35	475	4	2	—	—	6	12
36	476	4	—	—	—	—	4
Partie IV.		626	165	452	64	521	1828
en raison de		34	9	25	4	28	pour 100
37	477-486	75	14	7	2	30	128
Partie V.		75	14	7	2	30	128
en raison de		58	11	5	2	24	pour 100

Récapitulation.	Parties.	Renvois au		Formules trouvées dans des mémoires		Formules déduites.	Total des formules.
		Vol. VIII.	Vol. IV.	de moi.	d'autres auteurs.		
	I.	577	227	134	86	427	1451
	II.	996	442	648	167	1140	3393
	III.	346	167	31	47	968	1559
	IV.	626	165	452	64	521	1828
	V.	75	14	7	2	30	128
Partie I—V.		2620	1015	1272	366	3086	8359
en raison de		31	12	15	5	37	pour 100

Les divers changements qui viennent d'être exposés, réduction du volume des anciennes Tables, accroissement de 99 pour cent environ par de nouvelles formules, omission des notices littéraires, suffiront sans doute à justifier le nouveau titre de ces Nouvelles Tables.

Dans la préface du Tome IV, j'ai dû traiter de la classification des Tables. Je crois que l'usage a justifié les principes de cette classification, et par suite je les ai pris de nouveau pour base. De même dans le cadre des Tables il n'est survenu aucun changement d'importance, si ce n'est quelquefois une subdivision d'une table, que nécessitait une trop grande affluence de formules. Seulement, dans chaque Section j'ai voué une Table spéciale à ces „Intégrales Limites", dans lesquelles une constante converge vers zéro, ou diverge vers l'infini.

Quelques mots suffiront pour faire comprendre la construction des Tables elles-mêmes, qui n'a pas changé non plus. En tête de chaque Table on trouve au milieu, son numéro; à gauche, la description des fonctions intégrées; à droite, les limites de l'intégration. Ce sont les mêmes trois arguments principaux qui figurent dans le Sommaire des Tables.

Le manuscrit achevé, Sa Majesté notre Roi a daigné accorder une indemnité à l'éditeur, pour l'aider à supporter les frais considérables de l'impression d'un tel ouvrage. C'est grâce à cette haute et bienveillante intervention que l'impression a pu être commencée.

Toute personne, qui a quelque expérience d'une pareille entreprise, sait combien il est difficile d'éliminer toutes sortes de fautes, provenant des sources les plus diverses. Quoique je me fusse appliqué de toutes mes forces à obtenir une grande exactitude à cet égard, l'expérience m'avait montré combien il faut se méfier de soi-même, là où il n'y a aucun contrôle à imaginer. J'ai pris le parti de vérifier, après l'impression, chaque formule auprès de la source même. C'était un

travail laborieux, et il m'a fait trouver quelques intégrales oubliées dans la rédaction. En outre, depuis que le manuscrit avait été rédigé, j'avais encore rencontré quelques formules. Par suite j'ai cru devoir donner les unes et les autres dans une Addition, afin de mettre cet ouvrage, autant que possible, à la hauteur de l'époque actuelle. Pour que ces intégrales puissent entrer dans le corps de l'ouvrage, elles sont imprimées de manière à pouvoir être découpées et attachées auprès de la Table à laquelle elles appartiennent; par la même raison, le numéro d'ordre de la Table est continué pour ces formules supplémentaires.

Mais quant au but propre de cette révision, la recherche des fautes qui pouvaient s'être introduites dans cet ouvrage, elle ne m'a donné que trop de sujet de me féliciter de l'avoir entreprise. La liste des corrections peut en témoigner; j'y ai aussi noté les renvois fautifs. Oserais-je invoquer l'indulgence des savants en citant ici l'opinion bienveillante d'un éminent mathématicien anglais (A. d. M) [à l'occasion de mes Tables d'Intégrales Définies, dans *The Athenaeum*, N. 1607, Aug. 14, 1858]. „We must tell our general reader, that among other things which he does not know, all books of algebra will have misprints: the absence of a table of errata does not show that they are not there, but only that they have not been found out.”

Quant à l'éditeur, il s'est donné toute peine possible pour faire réussir ces Tables. Muni d'un tout nouveau système de types, l'atelier typographique de M. Drabbe s'est fait un point d'honneur de satisfaire aux soins qu'exige un tel ouvrage, où la rigueur est de première nécessité, sans toutefois que l'élégance doive en être exclue.

Je viens de donner une esquisse biographique des Nouvelles Tables. Puissent-elles trouver un accueil aussi bienveillant que leur soeur aînée.

D. B. D. H.

The entire edition of the *Tables d'Intégrales Définies*, which appeared in 1858 as Volume IV of the Memoirs of the Royal Academy of Sciences of Amsterdam, was rapidly exhausted. This unanticipated success, which may be attributed to the favorable reception of my work, the first of its kind, by various learned societies and by the foreign scientific journals, finds me appreciative, and not without pride.

It became necessary immediately to plan a new edition. Naturally I could utilize the experience gained in preparing the first edition, as well as suggestions which a number of scientists kindly made. Besides, I had, in the meantime, published some articles containing new formulas. Above all, our Academy had published, in 1862, the eighth volume of its Memoirs, containing my "Exposé de la théorie, des propriétés, des formules de transformation et des méthodes d'évaluation des intégrales définies."

Considering the increase in material, it was of prime importance to simplify the program as much as possible. It was essential to suppress unimportant integrals; the omission of references to the literature also seemed desirable.

To begin with, I omitted, as unimportant, proper definite integrals for which the indefinite integral involved could be evaluated in finite terms. Economies could also be effected where one integral could easily be transformed into a second. Thus, where the integrand is an odd

function or an even function, I employed only the limits 0 and 1, 0 and ∞ , 0 and $\frac{\pi}{2}$, 0 and π ; not -1 and 1 , $-\infty$ and ∞ , etc. Where the substitution $x = \frac{1}{y}$ leads to the same integrand, only the limits 0 and 1 are used; the results for the limits 1 and ∞ or 0 and ∞ can then easily be deduced. Advantage was similarly taken of the fact that an integrand which is a function of $\cos x$ goes over into a function of $\sin x$ under the substitution $x = \frac{\pi}{2} - y$.

One obtained thus a genuine simplification. It remained to suppress the references to the literature, which indicated the present state of the subject, as well as its history, and which served in the place of proofs of the formulas. It was necessary to compensate for this deletion, in such a way as to facilitate the verification of the formulas by readers desirous of making such verifications. This situation was met in the following manner.

The above mentioned Volume VIII of the Memoirs of the Academy contained, in accordance with its aim, the derivations of part of the results of Volume IV and a certain number of new formulas. In connection with these formulas references to the corresponding places in Vol. VIII are deemed sufficient; either there, or in the references there given to Vol. IV, adequate indications as to the sources of the results will be found. Thus the present Tables contain all of the formulas of Vol. VIII; they are indicated by the notation (VIII, . . .), the second number referring to the page which is to be consulted.

About this nucleus it was possible to group the various systems of formulas mentioned above, formulas contained either in the Memoirs or the Proceedings of our Academy, or in those of the Haarlem Society of Sciences, or in an article "Een onvermoeide Arbeid, etc." published in the Archives of a mathematical society of Amsterdam. References are given to these articles. (See abbreviations, etc., page 22, 23.) Where articles are of considerable length, references to definite pages are given. As to the article designated by (H), it should be observed, for the sake of historical accuracy, that some formulas there contained had previously been given by the eminent mathematician C. J. Malmsten in the New Acta of Upsala, Vol. XII, p. 171.

From this body of formulas, it was possible to deduce, by additions and subtractions, by

substitutions and by integration by parts, other formulas, which I had considered in Vol. II of the Memoirs of the Academy. Formulas which may thus be deduced are presented here chiefly where they seem to extend the scope of the Tables in a desirable way. As in Vol. IV, these results are indicated by the notations (V. T. . . ., N. . . .). It was judged unnecessary to give indications in regard to the proofs of such results; on the one hand such indications would lengthen the present volume undesirably; on the other, proofs of such results are entirely similar to the proofs of the results which they extend.

The above method of giving references was not applicable to certain formulas of Vol. IV. For such formulas, a reference to the appropriate page of Vol. IV is given. The notation used is (IV, . . .). For other formulas, compiled from various sources, there is given the name of the discoverer and the place where the proof is to be found.

I have thus generally given only the values of the integrals. The sources, except in the cases where they are given here, can be determined from Vol. IV, sometimes by a direct reference given here, sometimes by an intermediate reference to Vol. VIII.

The omission of references permitted a contraction of the Tables which makes their use more convenient. It became possible, namely, in many instances, to print two formulas on a single line. The size of the volume was thus reduced, with no loss in the facility with which the formulas may be consulted.

It will be seen now that without such simplifications the present volume would have been inconveniently large.

The original tables (Vol. IV, etc.) contained approximately 7300 formulas, of which about 4200 are given in these New Tables. This number grew to 8339, of which 2620 are presented in the Exposé (Vol. VIII) and 1272 in various notes mentioned above. I found 366 formulas either in publications which appeared later than 1859 or in others which I had not been able to consult previously. In connection with 1015 formulas, it has been necessary to give references to Vol. IV. Finally there are 3086 formulas, deduced from other formulas by methods described above. The following table will explain the details.

Section.	Tables.	References to		Formulas found in memoirs		Deducted formulas	Total number of formulas
		Vol. VIII.	Vol. IV.	mine	others		
1	1-25	232	82	—	13	103	430
2	26-29	20	15	—	6	25	66
3	30-33	13	3	—	1	33	50
4	34-75	298	119	134	66	254	871
5	76-78	14	4	—	—	11	29
6	78	—	4	—	—	1	5
Part I.		577	227	134	86	427	1451
Percentage		40	16	9	6	29	
7	80-105	106	126	—	17	219	468
8	106-148	214	122	—	104	362	802
9	149-228	571	191	648	41	224	1675
10	229-254	97	3	—	3	334	437
11	255	8	—	—	2	1	11
Part II.		996	442	648	167	1140	3393
Percentage		29	13	19	5	34	
12	256-260	14	11	—	1	50	76
13	261-281	105	84	—	33	105	327
14	282	3	—	—	1	6	10
15	283	5	—	—	—	1	6
16	284-338	154	62	31	6	721	974
17	339	2	—	—	—	8	10
18	340	6	1	—	—	2	9
19	341-349	41	4	—	3	74	122
20	350, 351	16	5	—	3	1	25
Part II.		346	167	31	47	968	1559
Percentage		22	11	2	3	62	
21	352-360	21	26	—	9	55	111
22	361-398	120	76	292	24	82	594
23	399	7	10	—	—	6	23
24	400	5	—	—	1	—	6
25	401-434	181	35	128	18	170	532
26	435-443	3	2	5	—	111	121
27	444	1	—	—	—	4	5
28	455-459	164	6	27	6	29	232
29	460-465	93	—	—	—	—	93
30	466	12	—	—	—	—	12
31	467-471	—	8	—	3	45	56
32	472	2	—	—	3	6	11
33	473	4	—	—	—	5	9
34	474	5	—	—	—	2	7
35	475	4	2	—	—	6	12
36	476	4	—	—	—	—	4
Part IV.		626	165	452	64	521	1828
Percentage		34	9	25	4	28	
37	477-486	75	14	7	2	30	128
Part V.		75	14	7	2	30	128
Percentage		58	11	5	2	24	

Summary.	Parts.	References to		Formulas found. in memoirs		Deduced formulas	Total number of formulas
		Vol. VIII.	Vol. IV.	mine	others		
	I.	577	227	134	86	427	1451
	II.	996	442	648	167	1140	3393
	III.	346	167	31	47	968	1559
	IV.	626	165	452	64	521	1828
	V.	75	14	7	2	30	128
Part I—V.		2620	1015	1272	366	3086	8359
Percentage		31	12	15	5	37	

The modifications which have been described, namely, the reduction of the size of the Tables, the increase, by about 99 per cent, of the number of formulas and the omission of references, justify, we believe, the new title of this work.

In the preface to Vol. IV, I discussed the method of classifying integrals which was used in that volume. I consider that the principles of this classification have been justified by the extensive use which the Tables have received and I have used the same principles here. Also no important change was made in the body of the Tables, except that, because of the great increase in the number of formulas, it was occasionally necessary to subdivide a table. It might also be mentioned that, in each Section, I devoted a special Table to "Limiting Values of Integrals," in which a parameter tends either towards zero or towards infinity.

A few words will explain the construction of the Tables themselves, which has not changed. At the head of each Table, one finds, at the center, its number; at the left, the description of the integrands; at the right, the limits of integration. The same three principal elements appear in the Summary of Tables.

When the manuscript was completed, His Majesty our King graciously accorded a subsidy to the publisher, to help towards defraying the considerable expense of printing. This benevolent act has made possible the publication of the tables.

Whoever is familiar with an undertaking of this kind, knows how difficult it is to avoid all sorts of errors, arising from innumerable sources. Although I had exerted myself to the utmost to secure great accuracy, I knew from experience what great danger of error exists where no method for checking the results is available. I therefore undertook, after the printing, to verify each formula at its very source. During this laborious work, I discovered some formulas which I had previously overlooked. With a view towards bringing this work up to date as far as possible, these formulas, together with some others which I found after the manuscript was completed, are presented here in an Addition (Page 699).

I consider myself fortunate to have undertaken the search for errors in the Tables. The list of corrections, in which faulty references are included, bears ample witness on this question. I would plead for the indulgence of the scientific public by quoting an eminent English mathematician (A. de M., at the time of publication of my *Tables d'Intégrales Définies*. The *Athenaeum*, No. 1607, Aug. 14, 1858): "We must tell our general reader, among other things which he does not know, that all books of algebra will have misprints; the absence of a table of errata does not show that they are not there, but only that they have not been found." (Corrections here referred to have been incorporated in the text in this edition.)

The publisher has taken all possible pains to insure the success of these Tables. Furnished with new type, the printing establishment of Mr. Drabbe has made it a point of honor to maintain that care which is so essential in the case of a work of this kind, in which accuracy, above all, is necessary, while elegance is not to be ignored.

This is merely a biographical sketch of the New Tables. May this edition of the tables have the same benevolent reception which was accorded to the first.

D. B. d. H.

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NOUVELLES TABLES

D'INTÉGRALES DÉFINIES,

PAR

D. BIERENS DE HAAN.

DIVISION DES TABLES.

PARTIE PREMIÈRE.

INTÉGRALES À UNE SEULE FONCTION.

I.	F. Algébrique	T. 1 à 25.
II.	, Exponentielle	, 26 , 29.
III.	, Logarithmique	, 30 , 33.
IV.	, Circulaire Directe	, 34 , 75.
V.	, Circulaire Inverse	, 76 , 78.
VI.	Autre Fonction	, 79.

PARTIE DEUXIÈME.

INTÉGRALES À DEUX FONCTIONS, DONT L'UNE EST ALGÈBRE.

VII.	F. Algébrique et Exponentielle	T. 80 à 105.
VIII.	, Algébrique et Logarithmique	, 106 , 148.
IX.	, Algébrique et Circulaire Directe	, 149 , 228.
X.	, Algébrique et Circulaire Inverse	, 229 , 254.
XI.	, Algébrique et Autre Fonction	, 255.

PARTIE TROISIÈME.

INTÉGRALES À DEUX FONCTIONS, DONT AUCUNE N'EST ALGÈBRE.

XII.	F. Exponentielle et Logarithmique	T. 256 à 260.
XIII.	, Exponentielle et Circulaire Directe	, 261 , 281.
XIV.	, Exponentielle et Circulaire Inverse	, 282.
XV.	, Exponentielle et Autre Fonction	, 283.
XVI.	, Logarithmique et Circulaire Directe	, 284 , 338.
XVII.	, Logarithmique et Circulaire Inverse	, 339.
XVIII.	, Logarithmique et Autre Fonction	, 340.
XIX.	, Circulaire Directe et Circulaire Inverse	, 341 , 349.
XX.	, Circulaire Directe et Autre Fonction	, 350 et 351.

DIVISION DES TABLES.

PARTIE QUATRIÈME.

INTÉGRALES À TROIS FONCTIONS.

XXI.	F. Algébrique, Exponentielle et Logarithmique	T. 352 à 360.
XXII.	, Algébrique, Exponentielle et Circulaire Directe	, 361 , 398.
XXIII.	, Algébrique, Exponentielle et Circulaire Inverse	, 399.
XXIV.	, Algébrique, Exponentielle et Autre Fonction	, 400.
XXV.	, Algébrique, Logarithmique et Circulaire Directe	, 401 , 434.
XXVI.	, Algébrique, Logarithmique et Circulaire Inverse	, 435 , 443.
XXVII.	, Algébrique, Logarithmique et Autre Fonction	, 444.
XXVIII.	, Algébrique, Circulaire Directe et Circulaire Inverse	, 445 , 459.
XXIX.	, Algébrique, Circulaire Directe et Autre Fonction	, 460 , 465.
XXX.	, Algébrique, Circulaire Inverse et Autre Fonction	, 466.
XXXI.	, Exponentielle, Logarithmique et Circulaire Directe	, 467 , 471.
XXXII.	, Exponentielle, Circulaire Directe et Circulaire Inverse	, 472.
XXXIII.	, Exponentielle, Circulaire Directe et Autre Fonction	, 473.
XXXIV.	, Logarithmique, Circulaire Directe et Circulaire Inverse	, 474.
XXXV.	, Logarithmique, Circulaire Directe et Autre Fonction	, 475.
XXXVI.	, Circulaire Directe, Circulaire Inverse et Autre Fonction	, 476.

PARTIE CINQUIÈME.

INTÉGRALES À PLUS DE TROIS FONCTIONS.

XXXVII.	F. Algébrique et plusieurs Fonctions	T. 477 à 486.
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SOMMAIRE DES TABLES.

PARTIE PREMIÈRE.

I. FONCTION ALGÈBRIQUE. T. 1 à 25.

1.	F. Alg. rat. ent.	Lim. 0 et 1.
2.	" " " fract. à dén. binôme	. . . . .	" " " "
3.	" " " " " " $(a \pm b x^c)^a$	. . . . .	" " " "
4.	" " " " " " $(a \pm b x^c)^a x^c$	. . . . .	" " " "
5.	" " " " " " produit de binômes	. . . . .	" " " "
6.	" " " " " " trinôme et composé	. . . . .	" " " "
7.	" " irrat. ent. et à dén. monôme	. . . . .	" " " "
8.	" " " fract. à dén. $(1 \pm x)^a, (1 \pm x^2)^a$	. . . . .	" " " "
9.	" " " " " " $(1 - x^a)^b$	. . . . .	" " " "
10.	" " " " " " composé avec fact. monôme	. . . . .	" " " "
11.	" " " " " " à deux facteurs $(1 \pm x)$	. . . . .	" " " "
12.	" " " " " " " " $(1 \pm x^2)$	. . . . .	" " " "
13.	" " " " " " " fact. binômes	. . . . .	" " " "
14.	" " " " " " trinôme et composé	. . . . .	" " " "
15.	" " . . . . .	. . . . .	Lim. — 1 et 1.
16.	" " rat. fract. à dén. $(1 \pm x)^a$	. . . . .	Lim. 0 et ∞ .
17.	" " " " " " $(1 \pm x^a)^b$	. . . . .	" " " "
18.	" " " " " " à fact. mon. et bin.	. . . . .	" " " "
19.	" " " " " " " binômes.	. . . . .	" " " "
20.	" " " " " " polynôme et composé.	. . . . .	" " " "
21.	" " irrat. fract. . . . .	. . . . .	" " " "
22.	" " fract. . . . .	. . . . .	Lim. — ∞ et ∞ .
23.	" " " . . . . .	. . . . .	Lim. 1 et ∞ .
24.	" " " . . . . .	. . . . .	Lim. diverses.
25.	" " Intégrales Limites . . . . .	. . . . .	Lim. diverses.

SOMMAIRE DES TABLES.

II. FONCTION EXPONENTIELLE. T. 26 à 29.

26.	F. Expon.	Forme entière	Lim. 0 et ∞ .
27.	"	" " fract.	" " " "
28.	"	" "	Lim. — ∞ et ∞ .
29.	"	" "	Lim. diverses.

III. FONCTION LOGARITHMIQUE. T. 30 à 33.

30.	F. Logarithmique.	Forme rat. ent.	Lim. 0 et 1.
31.	"	" " " " fract.	" " " "
32.	"	" " " " irrat.	" " " "
33.	"	" "	Lim. diverses.

IV. FONCTION CIRCULAIRE DIRECTE. T. 34 à 75.

34.	F. Circ. Dir.	rat. ent.	Lim. 0 et $\frac{\pi}{4}$.
35.	"	" " " " fract. à dén. monôme	" " " "
36.	"	" " " " " " " polynôme	" " " "
37.	"	" " " " " " " composé	" " " "
38.	"	" " " " irrat. " " " monôme	" " " "
39.	"	" " " " " " " polynôme et composé	" " " "
40.	"	" " " rat. ent. à un facteur $\sin^a x$	Lim. 0 et $\frac{\pi}{2}$.
41.	"	" " " " " " " " $\cos^a x$	" " " "
42.	"	" " " " " " " Autre forme	" " " "
43.	"	" " " " " " " comp. à argument monôme	" " " "
44.	"	" " " " " " " " polynôme	" " " "
45.	"	" " " " " " " fract. à num. et dén. monômes	" " " "
46.	"	" " " " " " " binôme et dén. monôme	" " " "
47.	"	" " " " " " " dén. binôme	" " " "
48.	"	" " " " " " " puissance de binômes	" " " "
49.	"	" " " " " " " binôme composé	" " " "
50.	"	" " " " " " " trinôme et composé	" " " "
51.	"	" " " " " " " comp. à argument $\tan x$	" " " "
52.	"	" " " " " " " " autre argument	" " " "
53.	"	" " " " irrat. ent. à un facteur $\sqrt{1 - p^2 \sin^2 x}$	" " " "

SOMMAIRE DES TABLES.

54.	F. Circ. Dir. irrat. ent.	Autre forme	Lim. 0 et $\frac{\pi}{2}$.
55.	" " " " fract. à dén. monôme	" " " "	" " " "
56.	" " " " " " " binôme du premier degré	" " " "	" " " "
57.	" " " " " " " $\sqrt{1-p^2 \sin^2 x}$	" " " "	" " " "
58.	" " " " " " " $\sqrt{1-p^2 \sin^2 x}^2$	" " " "	" " " "
59.	" " " " " " " $\sqrt{1-p^2 \sin^2 x}^5$	" " " "	" " " "
60.	" " " " " " " autre dén. binôme	" " " "	" " " "
61.	" " " " " " " dén. binôme composé	" " " "	" " " "
62.	" " " " rat. ent. monôme	Lim. 0 et π .	
63.	" " " " " " " . Autre forme	" " " "	" " " "
64.	" " " " " " " fract. à dén. mon. et bin.	" " " "	" " " "
65.	" " " " " " " trinôme	" " " "	" " " "
66.	" " " " " " " " composé	" " " "	" " " "
67.	" " " " irrat. fract.	" " " "	" " " "
68.	" " " "	Lim. 0 et 2π .	
69.	" " " "	Lim. $p\pi$ et $q\pi$.	
70.	" " " "	Lim. 0 et ∞ .	
71.	" " " "	Lim. 0 et λ .	
72.	" " " " irrat. ent. et fract. à dén. rat.	Lim. λ et μ .	
73.	" " " " " fract. à dén. irrat.	" " " "	" " " "
74.	" " " "	Lim. diverses.	
75.	" " " " . Intégrales Limites	Lim. diverses.	

V. FONCTION CIRCULAIRE INVERSE. T. 76 à 78.

76.	F. Circ. Inv.	Lim. 0 et 1.
77.	" " " "	Lim. 0 et ∞ .
78.	" " " "	Lim. 1 et ∞ .

VI. AUTRE FONCTION. T. 79.

79.	Autre Fonction	Lim. diverses.
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PARTIE DEUXIÈME.

80.	F.	Alg.	et Expon.	Lim. 0 et 1.
81.	"	" rat. ent.	" monôme en num.	Lim. 0 et ∞.
82.	"	" " monôme x^a pour a spécial	" binôme $e^{ax} \pm 1$ en dén.	" " " "
83.	"	" " " " " " " " général	" " " " " " " "	" " " "
84.	"	" " " " " " " "	" " " $e^{ax} \pm e^{-ax}$ en dén.	" " " "
85.	"	" " " " " " " "	" " " $(e^{ax} \pm 1)^2$ " " "	" " " "
86.	"	" " " " " " " "	" " " $(e^{ax} \pm e^{-ax})^2$ en dén.	" " " "
87.	"	" " " " binôme	" " " en dén.	" " " "
88.	"	" " " " "	" " trinôme " " "	" " " "
89.	"	" " " fract. à dén. x^a pour a spécial	" " en num.	" " " "
90.	"	" " " " " " " " " " général	" " " " " " " "	" " " "
91.	"	" " " " " " " binôme simple	" " " " " " " "	" " " "
92.	"	" " " " " " " autre dén.	" " " " " " " "	" " " "
93.	"	" " " " " " " dén. monôme	" " bin. $e^{ax} \pm 1$ en dén. A un terme	" " " "
94.	"	" " " " " " " " "	" " " " " " " plus. termes.	" " " "
95.	"	" " " " " " " " "	" " " $e^{ax} \pm e^{-ax}$ en dén.	" " " "
96.	"	" " " " " " " " "	" " trinôme en dén.	" " " "
97.	"	" " " " " " " binôme	" " binôme " " "	" " " "
98.	"	" " " irrat.	" " " " " " " "	" " " "
99.	"	" " " " " " " " "	" " sous forme irrat.	" " " "
100.	"	" " " rat. ent.	" " " " " " " "	Lim. — ∞ et ∞.
101.	"	" " " " " " " x	" " polynôme en dén.	" " " "
102.	"	" " " " " " " x^a	" " " " " " " "	" " " "
103.	"	" " " " fract.	" " " " " " " "	" " " "
104.	"	" " " " " " " " "	" " " " " " " "	Lim. diverses.
105.	"	" " " " " " " " "	" " " " " " " "	Intégrales Limites . Lim. diverses.

106. F. Alg. rat. ent.	et Log. en num. $l(1 \pm x^a)$	Lim. 0 et 1.
107. " " " "	" " " " d' autre forme	" " " "
108. " " " fract. à dén. binôme	" " " " lx	" " " "
109. " " " " " "	" " " " $(lx)^a$ pour a spécial	" " " "
110. " " " " " "	" " " " " " général	" " " "

SOMMAIRE DES TABLES.

111.	F.	Alg. rat. fract. à dén. puiss. de binômes	et Log. en num. $(\ell x)^a$	lim. 0 et 1.
112.	"	" " " " " binôme composé	" " " " "	" " " "
113.	"	" " " " " trinôme	" " " " "	" " " "
114.	"	" " " " "	" " " " d' autre forme entière	" " " "
115.	"	" " " " "	" " " " de forme fractionn.	" " " "
116.	"	" " " " "	" " " " à deux facteurs	" " " "
117.	"	" " irrat. ent.	" " " " "	" " " "
118.	"	" " " fract.	" " " " $(\ell x)^a$	" " " "
119.	"	" " " " "	" " " " $\ell(1 - p^2 x^2)$	" " " "
120.	"	" " " " "	" " " " d' autre fonct. binôme entière.	" " " "
121.	"	" " " " "	" " " " " " entière	" " " "
122.	"	" " " " "	" " " " de fonct. fractionn.	" " " "
123.	"	" " rat. ent.	" " " dén. ℓx	" " " "
124.	"	" " " " "	" " " " $(\ell x)^a$	" " " "
125.	"	" " " " "	" " " " binôme	" " " "
126.	"	" " " fract. à dén. monôme	" " " " monôme	" " " "
127.	"	" " " " " " $1 \pm x$	" " " " " "	" " " "
128.	"	" " " " " autre dén. binôme	" " " " " "	" " " "
129.	"	" " " " " dén. binôme	" " " " binôme	" " " "
130.	"	" " " " " trinôme et composé	" " " " monôme	" " " "
131.	"	" " " " " " composé	" " " " d' autre forme	" " " "
132.	"	" " irrat. fract.	" " " " "	" " " "
133.	"	" " rat.	" " " " sous forme irrat.	" " " "
134.	"	" " " fract. à dén. monôme	" " " num.	lim. 0 et ∞ .
135.	"	" " " " " " binôme	" " " " $(\ell x)^a$	" " " "
136.	"	" " " " " " "	" " " " d' autre forme entière	" " " "
137.	"	" " " " " " "	" " " " de fonction fract. à dén.	" " " "
138.	"	" " " " " " "	" " " " d' autre fonction fract.	" " " "
139.	"	" " " " " " puiss. de binômes	" " " " "	" " " "
140.	"	" " " " " autre dén.	" " " " ℓx	" " " "
141.	"	" " " " " " "	" " " " d' autre forme	" " " "
142.	"	" " irrat. fract.	" " " " "	" " " "
143.	"	" " "	" " " dén.	" " " "
144.	"	" " "	" " " "	lim. 1 et ∞ .
145.	"	" " "	" " " "	lim. diverses.
146.	"	" " "	" " " Intégrales Limites	lim. diverses.
147.	"	" " "	" " de Log.	lim. 0 et 1.
148.	"	" " "	" " " "	lim. 0 ou 1 et ∞ .

SOMMAIRE DES TABLES.

IX. FONCTIONS ALGÈBRE ET CIRCULAIRE DIRECTE. T. 149 à 228.

149. F. Alg.	et Circ. Dir.	Lim. 0 et 1.
150. " " rat. ent.	" " "	Lim. 0 et ∞ .
151. " " " fract. à dén. x	" " " en num. à un ou deux fact. mon. . .	" " " "
152. " " " " " " "	" " " " " trois fact. monômes . . .	" " " "
153. " " " " " " "	" " " " " plus. " " . . .	" " " "
154. " " " " " " "	" " " " " forme irrat.	" " " "
155. " " " " " " "	" " " " " polynôme	" " " "
156. " " " " " " x^a pour a spécial	" " " " " à un fact. monôme	" " " "
157. " " " " " " " " " "	" " " " " plus. fact. monômes . . .	" " " "
158. " " " " " " " " " "	" " " " " polynôme	" " " "
159. " " " " " " " " " général	" " " " "	" " " "
160. " " " " " " $q^a + x^a$	" " " " " à un fact.	" " " "
161. " " " " " " $q^a - x^a$	" " " " " " " "	" " " "
162. " " " " " " $q^2 + x^2$	" " " " " " " " $\sin^a x$ et un autre .	" " " "
163. " " " " " " "	" " " " " " " " $\cos^a x$ " " " "	" " " "
164. " " " " " " "	" " " " " " trois facteurs	" " " "
165. " " " " " " "	" " " " " " plus. " "	" " " "
166. " " " " " " $q^2 - x^2$	" " " " " " deux ou trois fact. . . .	" " " "
167. " " " " " " "	" " " " " " plus. facteurs	" " " "
168. " " " " " " $q^4 + x^4$	" " " " "	" " " "
169. " " " " " " $q^4 - x^4$	" " " " "	" " " "
170. " " " " " " $(q^2 + x^2)^a$	" " " " "	" " " "
171. " " " " " " $(q^2 - x^2)^a$	" " " " "	" " " "
172. " " " " " " prod. de bin. et mon.	" " " " " à un ou deux fact. . . .	" " " "
173. " " " " " " " " " " "	" " " " " d' autre forme	" " " "
174. " " " " " " " " " "	" " " " " à un fact. $\sin x$	" " " "
175. " " " " " " " " " "	" " " " " d' autre forme	" " " "
176. " " " " " " polynôme	" " " " "	" " " "
177. " " " irr. fract.	" " " " " monôme. Circ. de x . . .	" " " "
178. " " " " "	" " " " " polynôme. Circ. de x . . .	" " " "
179. " " " " "	" " " " " . Circul. de $x^a \pm x^{-a}$. . .	" " " "
180. " " " rat. " à dén. monôme	" " " " " dén. monôme	" " " "
181. " " " " " " "	" " " " " bin. rat. et un fact. au num.	" " " "
182. " " " " " " "	" " " " " " " plus. fact. au num.	" " " "
183. " " " " " " "	" " " " " irrat. et un fact. au num.	" " " "
184. " " " " " " "	" " " " " " plus. fact. au num. av. Tgx " " "	" " " "

SOMMAIRE DES TABLES.

185. F. Alg. rat. fract. à dén. monôme	et Circ. Dir. en dén. bin. irr. et plus. fact. au num. sans Tgx . Lim. 0 et ∞ .
186. " " " " " " "	" " " " " prod. de binôme et monôme . . . " " " "
187. " " " " " " "	" " " " " trin. et un fact. au num. . . . " " " "
188. " " " " " " "	" " " " " " plus. fact. au num. avec Tgx . " " " "
189. " " " " " " "	" " " " " " " " sans Tgx . " " " "
190. " " " " " " "	" " " " " " . Autre forme " " " "
191. " " " " " " bin. $q^2 + x^2$	" " " " " monôme " " " "
192. " " " " " " $q^2 + x^2$	" " " " " trinôme et un fact. au num. . . . " " " "
193. " " " " " " $q^2 - x^2$	" " " " " " " " " " " " . . . " " " "
194. " " " " " " $q^2 + x^2$	" " " " " " deux fact. au num. . . . " " " "
195. " " " " " " "	" " " " " " plus. " " " . . . " " " "
196. " " " " " " "	" " " " " " fonct. polyn. au num. " " " "
197. " " " " " " $q^2 - x^2$	" " " " " " mon. " " . . . " " " "
198. " " " " " " "	" " " " " " polyn. " " . . . " " " "
199. " " " " " " $(q^2 - x^2)^2$	" " " " " " " " "
200. " " " " " " trinôme	" " " " " " " " "
201. " " " " " " composé	" " " " " " " " "
202. " "	" " " Lim. — ∞ et ∞ .
203. " "	" " " Lim. 1 et ∞ .
204. " "	" " " Lim. 0 et $\frac{\pi}{4}$.
205. " " rat. ent.	" " " ent. Lim. 0 et $\frac{\pi}{2}$.
206. " " " "	" " " en dén. monôme " " " "
207. " " " "	" " " " binôme " " " "
208. " " " "	" " " " d' autre forme " " " "
209. " " " "	" " " sous forme irrat. ent. " " " "
210. " " " "	" " " " " " à dén. monôme " " " "
211. " " " "	" " " à dén. $\sqrt{1-p^2 \sin^2 x}, \sqrt{1-p^2 \sin^2 x}^3$ " " " "
212. " " " "	" " " " " $\sqrt{1-p^2 \sin^2 x}^5$ " " " "
213. " " " "	" " " " " $\sqrt{1-p^2 \sin^2 x}^7$ " " " "
214. " " " "	" " " " " $\sqrt{1-p^2 \cos^2 x}, \sqrt{1-p^2 \cos^2 x}^3$ " " " "
215. " " " "	" " " " " $\sqrt{1-p^2 \cos^2 x}^5$ " " " "
216. " " " "	" " " " " $\sqrt{1-p^2 \cos^2 x}^7$ " " " "
217. " " " "	" " " sous autre forme irrat. fract. " " " "
218. " " " "	" " " ent. Lim. 0 et π .
219. " " " "	" " " en dén. binôme " " " "
220. " " " "	" " " " " puiss. de binôme " " " "

SOMMAIRE DES TABLES.

221. F. Alg. rat. ent.	et Circ. Dir. en dén. trinôme $1 + q \cos x + r$. Lim. 0 et π .
222. " " " "	" " " " " d' autre forme. " " " "
223. " " " "	" " " Lim. 0 et 2π .
224. " " " "	" " " Lim. 0 et p .
225. " " " "	" " " Lim. p et q .
226. " " " "	" " " Lim. diverses.
227. " " " "	" " " . Intégrales Limites. [$\text{Lim. } k = 0$]. Lim. diverses.
228. " " " "	" " " . " " " [$\text{Lim. } k = \infty$]. Lim. diverses.

X. FONCTIONS ALGÈBRE ET CIRCULAIRE INVERSE. T. 229 à 254.

229. F. Alg. rat. ent.	et Circ. Inv. de x Lim. 0 et 1.
230. " " " fract. à dén. monôme	" " " " " " " " " " " " " "
231. " " " " " binôme	" " " " " à un fact. monôme
232. " " " " " " "	" " " " " binôme
233. " " " " " " "	" " " " " plus. fact.
234. " " " " " puiss. de binômes	" " " " " " " " " " " " " "
235. " " " " " composé	" " " " " " " " " " " " " "
236. " " " irrat. ent.	" " " " " " " " " " " " " "
237. " " " fract. à dén. $\sqrt{1-p^2x^2}$	" " " $\text{Arcsin } x$
238. " " " " " $\sqrt{1-p^2+p^2x^2}$	" " " " " " " " " " " " " "
239. " " " " " composé	" " " " " " " " " " " " " "
240. " " " " " $\sqrt{1-p^2x^2}$	" " " $\text{Arccos } x$
241. " " " " " $\sqrt{1-p^2+p^2x^2}$	" " " " " " " " " " " " " "
242. " " " " " composé	" " " " " " " " " " " " " "
243. " " " " " d' autre forme	" " " $\text{Arcsin } x$
244. " " " " " " "	" " " de x , d' autre forme
245. " " " fract.	" " " d' autre forme
246. " " " rat. ent.	" " " de x Lim. 0 et ∞ .
247. " " " fract. à dén. monôme	" " " " " " " " " " " " " "
248. " " " " " binôme	" " " " " " " " " " " " " "
249. " " " " " puiss. de binômes	" " " " " " " " " " " " " "
250. " " " " " d' autre forme	" " " " " " " " " " " " " "
251. " " " irrat. " "	" " " " " " " " " " " " " "
252. " " " fract.	" " " d' autre forme
253. " " " " "	" " " " " " " " " " " " " "
254. " " " " "	" " " " " " " " " " " " " "

SOMMAIRE DES TABLES.

XI. FONCTION ALGÈBRIQUE ET AUTRE FONCTION. T. 255.

255. F. Alg.	et Autre Fonction	Lim. diverses.
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PARTIE TROISIÈME.

XII. FONCTIONS EXPONENTIELLE ET LOGARITHMIQUE. T. 256 à 260.

256. F. Exp.	et Log. Fonction entière	Lim. 0 et ∞ .
257. " " polyn. en dén.	" " en num. $2x$	" " " "
258. " " " " "	" " " " $2(p^2 \pm x^2)$	" " " "
259. " " " " "	" " " " de fonct. Expon.	" " " "
260. " "	" "	Lim. diverses.

XIII. FONCTIONS EXPONENTIELLE ET CIRCULAIRE DIRECTE. T. 261 à 281.

261. F. Exp. $e^{\pm ax}$	et Circ. Dir. ent. à un facteur	Lim. 0 et ∞ .
262. " " "	" " " " d'autre forme	" " " "
263. " " $e^{\pm ax^2}$	" " " "	" " " "
264. " " en dén. binôme à Exp. $e^{\pm ax}$	" " " " en num.	" " " "
265. " " " num. et en dén. bin. à Exp. $e^{\pm ax}$	" " " " " "	" " " "
266. " " " " e^{-x^2}	" " " " dén. trinôme	" " " "
267. " " $e^{\pm ax}$ ou $e^{\pm ax^2}$	" " " " Autre forme	" " " "
268. " " d'autre forme	" " " "	" " " "
269. " "	" " " "	Lim. $-\infty$ et ∞ .
270. " " $e^{\pm ax}$	" " " "	Lim. 0 et $\frac{\pi}{2}$.
271. " " à exp. de Circ. Dir.	" " " " ent.	" " " "
272. " " " " " " "	" " " " en dén. à un fact. monôme	" " " "
273. " " " " " " "	" " " " " " d'autre forme	" " " "
274. " " en dén. polynôme	" " " " num.	" " " "
275. " " " " " "	" " " " dén.	" " " "
276. " "	" " " " de forme irrat.	" " " "
277. " "	" " " " Forme entière	Lim. 0 et π .

SOMMAIRE DES TABLES.

278. F. Exp.	et Circ. Dir. Forme fractionnaire	Lim. 0 et π .
279. " "	" " "	Lim. $a\pi$ et $b\pi$.
280. " "	" " "	Lim. diverses.
281. " "	" " " . Intégrales Limites	Lim. diverses.

XIV. FONCTIONS EXPONENTIELLE ET CIRCULAIRE INVERSE. T. 282.

282. F. Exp.	et Circ. Inv.	Lim. diverses.
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XV. FONCTION EXPONENTIELLE ET AUTRE FONCTION. T. 283.

283. F. Exp.	et Autre Fonction	Lim. diverses.
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XVI. FONCTIONS LOGARITHMIQUE ET CIRCULAIRE DIRECTE. T. 284 à 338.

284. F. Log.	et Circ. Dir.	Lim. 0 et 1.
285. " " en num. $(l \sin ax)^b$	" " " ent.	Lim. 0 et $\frac{\pi}{4}$.
286. " " " $(l \cos ax)^b, (l \tan ax)^b$	" " " "	" " " "
287. " " " "	" " " " . Autre forme	" " " "
288. " " " $l \sin ax, l \cos ax$	" " " rat. en dén. monôme	" " " "
289. " " " $l \tan ax$	" " " " " " " "	" " " "
290. " " " $(l \sin ax)^b, (l \cos ax)^b, (l \tan ax)^b$	" " " " " " " "	" " " "
291. " " " $(l \tan ax)^b$	" " " " " " binôme	" " " "
292. " " " "	" " " " " " composé	" " " "
293. " " " $l \tan \left(\frac{\pi}{4} \pm x \right)$	" " " " " " "	" " " "
294. " " " " d' autre forme	" " " " " " "	" " " "
295. " " " " Log. de Log.	" " " " " " "	" " " "
296. " " " " $(l \tan ax)^b$	" " " irrat. " "	" " " "
297. " " " " d' autre forme	" " " " " " "	" " " "
298. " " " dén. Fonction monôme	" " " ent.	" " " "
299. " " " " " "	" " " fract. à dén. monôme	" " " "
300. " " " " " "	" " " " " " d' autre forme	" " " "
301. " " " " binôme	" " " ent.	" " " "
302. " " " " " "	" " " en dén. rat.	" " " "
303. " " " " " "	" " " " " irrat.	" " " "
304. " " " " " "	" " " " . Autre forme	" " " "

SOMMAIRE DES TABLES.

305.	F. Log. en num.	$(\mathcal{L} \sin x)^n$	et Circ. Dir. rat. ent.	Lim. 0 et $\frac{\pi}{2}$.
306.	" " " "	$(\mathcal{L} \cos x)^n$	" " " " " " " " " " " "	" " " " " "
307.	" " " "	$(\mathcal{L} \tan x)^n$	" " " " " " " " " " " "	" " " " " "
308.	" "	et Circ. Dir. Log. de Circ. Dir. d' autre forme sans fact. Circ. Dir. . .	" " " " " " " " " " " "	" " " " " "
309.	" "	" " " " " " " " " " " "	" " " " " " " " " " " "	" " " " " "
310.	" " en num.	$(\mathcal{L} \sin x)^n$	et Circ. Dir. rat. en dén. monôme	" " " " " "
311.	" " " "	$(\mathcal{L} \cos x)^n$	" " " " " " " " " " " "	" " " " " "
312.	" " " "	$(\mathcal{L} \tan x)^n$	" " " " " " " " " " " "	" " " " " "
313.	" " " "	de fonct. binôme	" " " " " " " " " " " "	" " " " " "
314.	" " " "	d' autre forme entière	" " " " " " " " " " " "	" " " " " "
315.	" " " "	de fonct. fractionn.	" " " " " " " " " " " "	" " " " " "
316.	" " " "	. Produits	" " " " " " " " " " " "	" " " " " "
317.	" " " "	de Circ. Dir. monôme	" " " " " " " " binôme	" " " " " "
318.	" " " "	" " " binôme	" " " " " " " " " " " "	" " " " " "
319.	" " " "	" " " " " " " " " " " "	" " " " " " " " puissance de binômes .	" " " " " "
320.	" " " "	" " " " " " " " " " " "	" " " " " " " " composé	" " " " " "
321.	" " " "	" " " " " " " " " " " "	" " " " " " " " trinôme	" " " " " "
322.	" " " "	de Circ. Dir. monôme	" " " " " " " " " " " "	" " " " " "
323.	" " " "	$\mathcal{L}(1 - p^2 \sin^2 x)$	" " " " " " " " en dén. $\sqrt{1 - p^2 \sin^2 x}, \sqrt{1 - p^2 \sin^2 x}^3$.	" " " " " "
324.	" " " "	" " " " " " " " " " " "	" " " " " " " " d' autre forme	" " " " " "
325.	" " " "	d' autre Circ. Dir. polyn.	" " " " " " " " " " " "	" " " " " "
326.	" " " "	dén. monôme	" " " " " " " " " " " "	" " " " " "
327.	" " " "	$q^2 + (\mathcal{L} \sin x)^2$	" " " " " " " " " " " "	" " " " " "
328.	" " " "	d' autre forme binôme	" " " " " " " " " " " "	" " " " " "
329.	" " " "	sous forme irrat.	" " " " " " " " " " " "	" " " " " "
330.	" " " "	de Circ. Dir.	" " " " " " " " rat. ent.	Lim. 0 et π .
331.	" " " "	" " " " " " " " " " " "	" " " " " " " " fract.	" " " " " "
332.	" " " "	" " " " " " " " " " " "	" " " " " " " " " " " "	Lim. 0 et 2π .
333.	" " " "	" " " " " " " " " " " "	" " " " " " " " " " " "	Lim. 0 et $p\pi$.
334.	" " " "	" " " " " " " " " " " "	" " " " " " " " " " " "	Lim. 0 et λ .
335.	" " " "	" " " " " " " " " " " "	" " " " " " " " " " " "	Lim. λ et $\frac{1}{2}\pi$.
336.	" " " "	" " " " " " " " " " " "	" " " " " " " " " " " "	Lim. λ et μ .
337.	" " " "	" " " " " " " " " " " "	" " " " " " " " " " " "	Lim. diverses.
338.	" " " "	" " " " " " " " " " " "	" " " " " " " " " " " "	Intégrales Limites Lim. diverses.

XVII. FONCTIONS LOGARITHMIQUE ET CIRCULAIRE INVERSE. T. 339.

339.	F. Log.	et Circ. Inv.	Lim. 0 et 1.
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Page 15.

SOMMAIRE DES TABLES.

XVIII. FONCTION LOGARITHMIQUE ET AUTRE FONCTION. T. 340.

340. F. Log. et Autre fonction Lim. diverses.

XIX. FONCTIONS CIRCULAIRE DIRECTE ET CIRCULAIRE INVERSE. T. 344 à 349.

341. F. Circ. Dir. ent.	et Circ. Inv.	Lim. 0 et $\frac{\pi}{2}$.
342. " " " en dén. monôme	" " " à un facteur	" " " "
343. " " " " " "	" " " plus. facteurs	" " " "
344. " " " " " binôme	" " "	" " " "
345. " " " ent.	" " "	Lim. 0 et π .
346. " " " fract.	" " "	" " " "
347. " " "	" " "	Lim. 0 et ∞ .
348. " " "	" " "	Lim. diverses.
349. " " "	" " " . Intégrales Limites . . .	Lim. diverses.

XX. FONCTION CIRCULAIRE DIRECTE ET AUTRE FONCTION. T. 350 et 351.

350. F. Circ. Dir.	et Autre Fonction	Lim. 0 et $\frac{\pi}{2}$.
351. " " "	" " "	Lim. diverses.

PARTIE QUATRIÈME.

XXI. FONCTIONS ALGÈBRIQUE, EXPONENTIELLE ET LOGARITHMIQUE. T. 352 à 360.

352. F. Alg.	Exp.	et Log.	Lim. 0 et 1.
353. " " ent.	" monôme	" "	Lim. 0 et ∞ .
354. " " fract. à dén. mon. et bin.	" "	" "	" " " "
355. " " " " " puiss. de binômes	" "	" "	" " " "
356. " " rat.	" en dén. polyn.	" "	" " " "
357. " " irrat.	"	" "	" " " "
358. " "	"	" "	Lim. — ∞ et ∞ .
359. " "	"	" "	Lim. 1 et ∞ .
360. " "	"	" " . Intégrales Limites . . .	Lim. 0 et ∞ .

SOMMAIRE DES TABLES.

XXII. FONCTIONS ALGÈBRIQUE, EXPONENTIELLE ET CIRCULAIRE DIRECTE. T. 361 à 398

361. F. Alg. rat. ent.	Exp. $e^{\pm ax}$	et Circ. Dir.	Lim. 0 et ∞ .
362. " " " "	" e^{-ax^2}	" " "	" " " "
363. " " " "	" d' autre forme mon.	" " "	" " " "
364. " " " "	" en dén. binôme	" " "	" " " "
365. " " " fract. à dén. x	" $e^{\pm ax}$	" " " monôme au num. . .	" " " "
366. " " " " " " "	" de Circ. Dir.	" " " " " " . .	" " " "
367. " " " " " " "	"	" " " . Fonct. polyn. au num.	" " " "
368. " " " " " " x^2	" e^{ax}	" " "	" " " "
369. " " " " " " "	" d' autre forme	" " "	" " " "
370. " " " " " " x^3, x^4	"	" " "	" " " "
371. " " " " " " x^p	"	" " "	" " " "
372. " " " " " " $q^2 + x^2$	" monôme	" " " à un ou deux fact. .	" " " "
373. " " " " " " "	" "	" " " à trois ou quatre fact. .	" " " "
374. " " " " " " "	" à exp. polynôme	" " "	" " " "
375. " " " " " " "	" binôme	" " " à un fact.	" " " "
376. " " " " " " "	" "	" " " deux fact.	" " " "
377. " " " " " " "	" "	" " " trois "	" " " "
378. " " " " " " $q^2 - x^2$	" monôme	" " " un ou deux fact. .	" " " "
379. " " " " " " "	" "	" " " trois ou quatre fact. .	" " " "
380. " " " " " " "	" à exp. polynôme	" " "	" " " "
381. " " " " " " "	" binôme	" " "	" " " "
382. " " " " " " $4m^4 + x^4$	" de Circ. Dir.	" " "	" " " "
383. " " " " " " $q^4 - x^4$	" " " "	" " "	" " " "
384. " " " " " " $(q^2 - x^2)^2$	" " " "	" " "	" " " "
385. " " " " " " composé	" " " "	" " "	" " " "
386. " " " " "	"	" " " . Autre forme . . .	" " " "
387. " " " " monôme	" en dén. bin.	" " " au num.	" " " "
388. " " " " binôme	" " " " $e^x + e^{-x}$	" " " " "	" " " "
389. " " " " "	" " " " $e^x - e^{-x}$	" " " " "	" " " "
390. " " " " "	" " " polynôme	" " " . Autre forme . . .	" " " "
391. " " " " "	"	" " " au dén. monôme . .	" " " "
392. " " " " binôme $q^2 + x^2$	"	" " " " trinôme . . .	" " " "
393. " " " " d' autre forme	"	" " " " " " . . .	" " " "
394. " " " irrat. ent.	"	" " "	" " " "
395. " " " fract.	"	" " "	" " " "

SOMMAIRE DES TABLES.

396. F. Alg.	Exp.	et Circ. Dir.	Lim. 0 et $\frac{\pi}{2}$.
397. " "	"	" " "	Lim. diverses.
398. " "	"	" " " . Intégrales Limites.	Lim. diverses.

XXIII. FONCTIONS ALGÈBRIQUE, EXPONENTIELLE ET CIRCULAIRE INVERSE. T. 399.

399. F. Alg.	Exp.	et Circ. Inv.	Lim. 0 et ∞ .
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XXIV. FONCTIONS ALGÈBRIQUE, EXPONENTIELLE ET AUTRE FONCTION. T. 400.

400. F. Alg.	Exp.	et Autre Fonction	Lim. 0 et ∞ .
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XXV. FONCTIONS ALGÈBRIQUE, LOGARITHMIQUE ET CIRCULAIRE DIRECTE. T. 401 à 434.

401. F. Alg. rat. ent.	Log.	et Circ. Dir. de Log.	Lim. 0 et 1.
402. " " " fract. à dén. binôme	"	" " " " "	" " " "
403. " " " " " " $x(q^p + x^p)$	"	" " " " "	" " " "
404. " " " " " autre dén.	"	" " " " "	" " " "
405. " " "	" en dén. $(lx)^a$	" " "	" " " "
406. " " "	" " " $\sqrt{-lx}$	" " " de Log.	" " " "
407. " " " fract.	" " " $q^2 \pm (lx)^2$	" " " " "	" " " "
408. " " " irrat. fract.	" " " "	" " " " "	" " " "
409. " " " rat. fract. à dén. x	" $l(p + \text{Cos } x), l(p + \text{Cos}^2 x)$	" " " rat.	Lim. 0 et ∞ .
410. " " " " " " "	" $l(1 + 2p \text{Cos } x + p^2)$	" " " "	" " " "
411. " " " " " " "	" d' autre forme	" " " "	" " " "
412. " " " " " " "	" $l(1 - p^2 \text{Sin}^2 x)$	" " " irrat. $\sqrt{1 - p^2 \text{Sin}^2 x}$.	" " " "
413. " " " " " " "	" $l(1 + q \text{Sin}^2 x)$	" " " "	" " " "
414. " " " " " " "	" $l(1 - p^2 \text{Cos}^2 x)$	" " " " $\sqrt{1 - p^2 \text{Cos}^2 x}$.	" " " "
415. " " " " " " "	" $l(1 + q \text{Cos}^2 x)$	" " " "	" " " "
416. " " " " " " "	" de fraction	" " "	" " " "
417. " " " " " " $q^2 + x^2$ et "	" "	" "	" " " "
418. " " " " " " $q^2 - x^2$ "	" "	" "	" " " "
419. " " " " " " $q^4 \pm x^4$ "	" "	" "	" " " "
420. " " " " " autre dén. bin. "	" "	" " monôme	" " " "
421. " " " " " dén. binôme "	" "	" " polynôme	" " " "
422. " " " " " " "	" $l(ax)$	et " "	" " " "
423. " " " " " "	"	" " " . Autre forme. . . .	" " " "

SOMMAIRE DES TABLES.

424.	F. Alg. rat. fract. Log.	et Circ. Dir.	Lim. — ∞ et ∞ .
425.	" " " ent. et " de	" "	Lim. 0 et $\frac{\pi}{4}$.
426.	" " " " $l(1-p^2 \sin^2 x), l(1-p^2 \cos^2 x)$	" " en dén. $\sqrt{1-p^2 \sin^2 x}, \sqrt{1-p^2 \cos^2 x}$	Lim. 0 et $\frac{\pi}{2}$.
427.	" " " " " "	" " " " " $\sqrt{1-p^2 \sin^2 x}^5$	" " " "
428.	" " " " " "	" " " " " $\sqrt{1-p^2 \sin^2 x}^7$	" " " "
429.	" " " " " $l(1-p^2 \cos^2 x)$	" " " " " $\sqrt{1-p^2 \cos^2 x}^7$	" " " "
430.	" " " " " d' autre forme	" " " " "	" " " "
431.	" " " et " de	" " . Dén. $x^2 + (l \cos x)^2$	" " " "
432.	" " " " " "	" "	Lim. 0 et π .
433.	" " " " "	et " "	Lim. diverses.
434.	" " " " "	" " " . Intégrales Limites	Lim. diverses.

XXVI. FONCTIONS ALGÈBRE, LOGARITHMIQUE ET CIRCULAIRE INVERSE. T. 435 à 443.

435. F. Alg. rat.	Log. en num.	et Circ. Inv. . . . Lim. 0 et 1.
436. " " irrat. à dén. $\sqrt{1-p^2 x^2}$	" " " $\ell(1-p^2 x^2)$	" " " <i>Arcsin x.</i> " " " "
437. " " " " " $\sqrt{1-p^2 + p^2 x^2}$	" " " $\ell(1-p^2 + p^2 x^2)$	" " " " " " " "
438. " " " " " $\sqrt{1-p^2 x^2}$	" " " $\ell(1-p^2 x^2)$	" " " <i>Arcos x.</i> " " " "
439. " " " " " $\sqrt{1-p^2 + p^2 x^2}$	" " " $\ell(1-p^2 + p^2 x^2)$	" " " " " " " "
440. " " " d'autre forme	" " "	" " " . . . " " " "
441. " "	" " dén.	" " " . . . " " " "
442. " "	" "	" " " . . . Lim. 0 et ∞.
443. " "	" "	" " " . . . Lim. diverses.

XXVII. FONCTIONS ALGÈBRE, LOGARITHMIQUE ET AUTRE FONCTION. T. 444.

444. F. Alg. Log. et Autre Fonction Lim. diverses.

XXVIII. FONCTIONS ALGÈBRE, CIRCULAIRE DIRECTE ET CIRCULAIRE INVERSE. T. 445 à 450.

445.	F. Alg. rat. fract. à dén. monôme	Circ. Dir. rat.	et Circ. Inv.	. . . . .	Lim. 0 et co.
446.	" " " " " binôme	" " " " " " "	" " " " " " "	. . . . .	" " " "
447.	" " " " " monôme	" " irrat. à fact.	$\sqrt{1-p^2 \sin^2 x}$	et Circ. Inv.	
			$\text{Arc} \cos \{Tg \lambda . \sqrt{1-p^2 \sin^2 x}\}$	" " " "	
448.	" " " " " "	" " " " fact.	$\sqrt{1-p^2 \sin^2 x}$	et Circ. Inv.	
			$\text{Arccot} \{Tg \lambda . \sqrt{1-p^2 \sin^2 x}\}$	" " " "	

SOMMAIRE DES TABLES.

449.	F. Alg. rat. fract. à dén. monôme	Circ. Dir. irrat. à fact. $\sqrt{1-p^2 \cos^2 x}$	et Circ. Inv.
		$\text{Arctg} \{ \text{Tg } \lambda . \sqrt{1-p^2 \cos^2 x} \}$	Lim. 0 et ∞ .
450.	" " " " " " "	fact. $\sqrt{1-p^2 \cos^2 x}$	et Circ. Inv.
		$\text{Arccot} \{ \text{Tg } \lambda . \sqrt{1-p^2 \cos^2 x} \}$	" " " "
451.	" " " " " " "	fact. $(1+2p \cos x + p^2)^{\frac{1}{2}}$	et Circ. Inv. " " " "
452.	" " " " " " $q^2 + x^2$	" " " " "	" " " " " " " "
453.	" " " " " " $q^2 - x^2$	" " " " "	" " " " " " " "
454.	" " irrat. " " " $(q^2 + x^2)^{\frac{1}{2}}$	" " " " "	" " " " " " " "
455.	" " " " " " $x^r (q^2 + x^2)^{\frac{1}{2}}$	" " " " "	" " " " " " " "
456.	" " " " " " prod. de bin.	" " " " "	" " " " " " " "
457.	" " " " " " "	" " " " "	" " " " " " Lim. 0 et $\frac{\pi}{2}$.
458.	" " " " " " "	" " " " "	" " " " " " Lim. 0 et π .
459.	" " " " " " "	" " " " "	" " " " " " Lim. diverses.

XXIX. FONCTIONS ALGÈBRIQUE, CIRCULAIRE DIRECTE ET AUTRE FONCTION. T. 460 à 465.

460.	F. Alg. rat. fract. à dén. $q^2 + x^2$	Circ. Dir. à un ou trois fact. et Autre Fonction	Lim. 0 et ∞ .
461.	" " " " " " "	" " " deux fact.	" " " " " " " "
462.	" " " " " " "	" " " plus. fact.	" " " " " " " "
463.	" " " " " " $q^2 - x^2$	" " " un ou deux fact.	" " " " " " " "
464.	" " " " " " "	" " " plus. fact.	" " " " " " " "
465.	" " " " " " "	" " " " " " " " Autre forme.	" " " " " " " "

XXX. FONCTIONS ALGÈBRIQUE, CIRCULAIRE INVERSE ET AUTRE FONCTION. T. 466.

466.	F. Alg.	Circ. Inv.	et Autre Fonction	Lim. diverses.
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XXXI. FONCTIONS EXPONENTIELLE, LOGARITHMIQUE ET CIRCULAIRE DIRECTE. T. 467 à 471.

467.	F. Exp.	Log.	et Circ. Dir.	Lim. 0 et ∞ .
468.	" " monôme	"	" " " ent.	Lim. 0 et $\frac{\pi}{2}$.
469.	" " "	"	" " " fract.	" " " " " " " "
470.	" " binôme	"	" " " " " " " "	" " " " " " " "
471.	" " "	"	" " " " " " " "	Lim. diverses.

SOMMAIRE DES TABLES.

XXXII. FONCTIONS EXPONENTIELLE, CIRCULAIRE DIRECTE ET CIRCULAIRE INVERSE. T. 472.

472. F. Exp. Circ. Dir. et Circ. Inv. Lim. diverses.

XXXIII. FONCTIONS EXPONENTIELLE, CIRCULAIRE DIRECTE ET AUTRE FONCTION. T. 473.

473. F. Exp. Circ. Dir. et Autre Fonction Lim. diverses.

XXXIV. FONCTIONS LOGARITHMIQUE, CIRCULAIRE DIRECTE ET CIRCULAIRE INVERSE. T. 474.

474. F. Log. Circ. Dir. et Circ. Inv. Lim. diverses.

XXXV. FONCTIONS LOGARITHMIQUE, CIRCULAIRE DIRECTE ET AUTRE FONCTION. T. 475.

475. F. Log. Circ. Dir. et Autre Fonction Lim. diverses.

XXXVI. FONCTIONS CIRCULAIRE DIRECTE, CIRCULAIRE INVERSE ET AUTRE FONCTION. T. 476.

476. F. Circ. Dir. Circ. Inv. et Autre Fonction Lim. α et β .

PARTIE CINQUIÈME.

XXXVII. FONCTION ALGÈBRIQUE ET PLUSIEURS FONCTIONS. T. 477 à 486:

477. F. Alg. rat. ent.	Log.	Circ. Dir.	et 1 autre fonct. . Lim. diverses.
478. " " " "	Exp.		" 2 autres fonct. . Lim. 0 et ∞ .
479. " " " fract. à dén. mon.	Log.	" "	" 1 autre fonct. . Lim. diverses.
480. " " " " " bin. $q^2 + x^2$	Exp.	" " à 1 fact.	" " " " . . Lim. 0 et ∞ .
481. " " " " " " " " " " " " " "	"	" " " 2 " "	" " " " . . " " " "
482. " " " " " " " " " " " " " "	"	" " plus. fact.	" " " " . . " " " "
483. " " " " " " " " $q^2 - x^2$ " "	"	" " " 1 ou 2 fact.	" " " " . . " " " "
484. " " " " " " " " " " " " " "	"	" " plus. fact.	" " " " . . " " " "
485. " " " " " " " " " " " " " "	Log.	" "	" " " . . Lim. diverses.
486. " " irrat. fract.	Circ. Dir.	Circ. Inv.	" " " . . Lim. diverses.

ABRÉVIATIONS DANS LES TITRES DES TABLES.

F.	Fonction.	ent.	entier.	dén.	dénominateur.
Alg.	Algébrique.	fract.	fractionnaire.	fact.	facteur.
Log.	Logarithmique.	mon.	monôme.	prod.	produit.
Circ. Dir.	Circulaire Directe.	bin.	binôme.	puiss.	puissance.
Circ. Inv.	Circulaire Inverse.	trin.	trinôme.	comp.	composé.
rat.	rationnel.	polyn.	polynôme.	arg.	argument.
irrat.	irrationnel.	num.	numérateur.	exp.	exposant.

ABRÉVIATIONS ET NOTATIONS.

- IV, . . . Verhandelingen der Koninklijke Akademie van Wetenschappen, Deel IV, 1858. Tables d'intégrales définies, par D. Bierens de Haan.
- V, . . . Verhandelingen der Koninklijke Akademie van Wetenschappen, Deel V, 1857, contient: D. Bierens de Haan, Réduction des intégrales définies générales $\int_0^\infty F(x) \frac{\cos px dx}{q^2 + x^2}$, $\int_0^\infty F(x) \frac{\sin px dx}{q^2 + x^2}$, et application de ces formules au cas, que $F(x)$ a un facteur de la forme $\sin^a x$ ou $\cos^a x$.
- VIII, . . . Verhandelingen der Koninklijke Akademie van Wetenschappen, Deel VIII, 1862. Exposé de la théorie, des propriétés, des formules de transformation et des méthodes d'évaluation des intégrales définies, par D. Bierens de Haan.
- M. Verslagen en Mededeelingen der Koninklijke Akademie van Wetenschappen, Deel XVI, 1864, contient p. 28—159: D. Bierens de Haan, Bijdragen tot de theorie der bepaalde integralen, N^o. IV—VII.
- H, . . . Natuurkundige Verhandelingen van de Hollandsche Maatschappij der Wetenschappen te Haarlem, 2^e verzameling, Deel XVII, 1862. D. Bierens de Haan, Mémoire sur une méthode pour déduire quelques intégrales définies, en partie très-générales, prises entre les limites 0 et ∞ , et contenant des fonctions circulaires directes.

ABRÉVIATIONS ET NOTATIONS.

E. O. A. Archief uitgegeven door het Wiskundig Genootschap onder de
zinspreuk: Een onvermoeide arbeid komt alles te boven,
Deel I, 1856—1859, contient p. 177—200, 288—315:
D. Bierens de Haan, Over eenige bepaalde integralen van den vorm

$$\int_0^\infty \frac{e^{-px} \sin qx \cdot \sin rx \dots}{x^a} dx$$
 (ook voor het geval, dat de factor
 e^{-px} ontbreekt), en enkele andere, die daarmede samenhangen.
* dénote que la formule est quelque peu variée.

N. V. Amst. Nieuwe Verhandelingen der Eerste Klasse van het Koninklijk Ne-
derlandsche Instituut.
C. R. Comptes Rendus des Séances hebdomadaires de l'Académie des
Sciences. Paris.
Phil. Trans. Philosophical Transactions. London.
Sitz. Ber. Wien. Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften
(Math.-Naturwissensch. Classe). Wien.
Dsch. Zür. Neue Denkschriften der allgemeinen Schweizerischen Gesellschaft für
die gesammten Naturwissenschaften. Zürich.
Mem. Nap. Memorie della Reale Accademia delle Scienze. Napoli.
N. Act. Ups. Nova Acta Regiae Societatis Scientiarum Upsaliensis. Series 3^a. Upsal.
Handl. Stockh. Kongl. Vetenskaps Academiens Handlingar. Stockholm.

Ann. Math. Gergonne, Annales de Mathématiques pures et appliquées. Nismes.
L. Liouville, Journal de Mathématiques pures et appliquées. Paris.
P. Journal de l'École Polytechnique. Paris.
Math. The Mathematician.
L. & E. Phil. Mag. The London and Edinburgh Philosophical Magazine. 3^d Series.
L. E. & D. Phil. Mag. The London, Edinburgh and Dublin Philosophical Magazine. 4th Series.
C. M. J. The Cambridge Mathematical Journal.
C. & D. M. J. The Cambridge and Dublin Mathematical Journal.
Q. J. The Quarterly Journal of pure and applied Mathematics.
Cr. L. Crelle, Journal für reine und angewandte Mathematik. Berlin.
Gr. J. A. Grunert, Archiv der Mathematik und Physik. Greifswald.
Schl. Z. O. Schlömilch, Zeitschrift für Mathematik und Physik. Leipzig.
Int. Calc. A. De Morgan, Integral Calculus. London. 8^o.
Probab. Laplace, Théorie analytique des Probabilités. Paris, 1812. Courcier. 4^o.

ABRÉVIATIONS ET NOTATIONS.

$$A = 0,577215\dots$$

$$e = 2,718281\dots$$

$$\pi = 3,141592\dots$$

$$i = \sqrt{-1}$$

$$\text{Sinh } q = \frac{e^q - e^{-q}}{2}, \text{ Sinus hyperbolique}$$

$$\text{Cosh } q = \frac{e^q + e^{-q}}{2}, \text{ Cosinus "}$$

$$\text{Tgh } q = \frac{e^q - e^{-q}}{e^q + e^{-q}}, \text{ Tangente "}$$

$$\text{Coth } q = \frac{e^q + e^{-q}}{e^q - e^{-q}}, \text{ Cotangente "}$$

Notations, non admises comme arguments dans les tables, mais employées dans les résultats, où elles portent sur des constantes.

$$\text{li } q = \int_0^q \frac{dx}{\ln x}, \text{ le Logarithme intégral}$$

$$\text{Ei } q = \int_{-q}^{\infty} \frac{e^{-x} dx}{x}, \text{ l'Exponentielle intégrale}$$

$$\text{Si } q = \int_0^q \frac{\sin x dx}{x}, \text{ le Sinus intégral}$$

$$\text{Ci } q = \int_{\infty}^q \frac{\cos x dx}{x}, \text{ le Cosinus intégral}$$

$$\Gamma(q) = \int_0^{\infty} e^{-x} x^{q-1} dx, \text{ Fonction Gamma}$$

$$\Psi'(q) = \frac{d}{dq} \cdot \ln \Gamma(q)$$

$$Y(p, \varphi) = \int_0^{\varphi} \frac{E(p, \varphi) d\varphi}{\sqrt{1 - p^2 \sin^2 \varphi}}$$

Ces fonctions sont comprises sous la dénomination d'Autres Fonctions.

$\binom{a}{b}$, le coefficient $b^{\text{ième}}$ de la puissance $a^{\text{ième}}$ du binôme.

$c^{a/b}$, faculté analytique (notation de Kramp).

B_{n-1} , coefficient ou nombre Bernoullien.

$\mathcal{E} q$, le plus grand entier contenu dans q .

AVIS : Quelquefois on trouve deux formules sur une même ligne.

PARTIE PREMIÈRE

PARTIE PREMIÈRE.

F. Alg. rat. ent.

TABLE 1.

Lim. 0 et 1.

- 1) $\int (1-x^2)^a dx = \frac{(2^{a/2})^2}{1^{2a+1/2}} \text{ (VIII, 239).}$
- 2) $\int (1-x)^{p-1} x dx = \frac{1}{p(p+1)} \text{ (VIII, 319).}$
- 3) $\int (1-x)^p x^{1-p} dx = \frac{1}{2} p \pi (1-p) \operatorname{Cosec} p \pi =$
- 4) $\int (1-x)^{1-p} x^p dx [p^2 < 1] \text{ (IV, 27).}$
- 5) $\int (1-x)^{p-1} x^{q-1} dx = \frac{\Gamma(p)\Gamma(q)}{\Gamma(p+q)} = \frac{1^{p-1/2}}{q^{p/2}} = \left[\begin{matrix} p \\ q \end{matrix} \right] = B(p, q),$ l'intégrale Eulérienne de première espèce (VIII, 262).
- 6) $\int (1-x)^{q+b-1} x^{p+a-1} dx = \frac{p^{a/2} q^{b/2}}{(p+q)^{a+b/2}} \frac{\Gamma(p)\Gamma(q)}{\Gamma(p+q)} \text{ (VIII, 262).}$
- 7) $\int (1-x)^{b-p} x^{p+c} dx = \frac{(1+p)^{c/2} (1-p)^{b/2}}{1^{b+c+1/2}} \frac{p \pi}{\sin p \pi} =$
- 8) $\int (1-x)^{p+c} x^{b-p} dx \text{ (IV, 28).}$
- 9) $\int (1-x)^{b-p} x^{p-c} dx = \frac{(1-p)^{b/2}}{p^{c/2} 1^{b-c+1/2}} \frac{p \pi}{\sin p \pi} =$
- 10) $\int (1-x)^{p-c} x^{b-p} dx \text{ (IV, 28).}$
- 11) $\int (1-x^2)^q x^{2a-1} dx = \frac{1^{a-1/2}}{2 \cdot (q+1)^{a/2}} \text{ (VIII, 238).}$
- 12) $\int (1-x^2)^q x^{2a} dx = \frac{2^{q/2}}{(2a+1)^{q+1/2}} \text{ (VIII, 238).}$
- 13) $\int (1-x^r)^{p-1} x^{q-1} dx = r^{p-1} \frac{1^{p-1/2}}{q^{p/r}} = \frac{1}{p r} \frac{pr+q}{(p+1)q} \cdot \frac{2(pr+q+r)}{(p+2)(q+r)} \cdot \frac{3(pr+q+2r)}{(p+3)(q+2r)} \dots$
(VIII, 233, 234).
- 14) $\int (1-x)^{a-1} (1+q x^b)^c x^{p-1} dx = 1^{a-1/2} \sum_0^{\infty} \binom{c}{n} \frac{q^n}{(p+nb)^{a/2}} [q^2 < 1] \text{ (VIII, 475).}$
- 15) $\int [(1+x)^{p-1} (1-x)^{q-1} + (1+x)^{q-1} (1-x)^{p-1}] dx = 2^{p+q-1} \frac{\Gamma(q)\Gamma(r)}{\Gamma(p+q)} \text{ (VIII, 631).}$
- 16) $\int [p^r x^{r-1} (1-px)^{q-1} + (1-p)^q x^{q-1} \{1-(1-p)x\}^{r-1}] dx = \frac{\Gamma(q)\Gamma(r)}{\Gamma(q+r)} \text{ (VIII, 631).}$

- 1) $\int \frac{x^{p-1} dx}{1+x} = \sum_{n=0}^{\infty} \frac{(-1)^n}{p+n} \text{ (VIII, 577)} = \frac{1}{2} Z' \left(\frac{p+1}{2} \right) - \frac{1}{2} Z' \left(\frac{p}{2} \right) \text{ (IV, 29).}$
- 2) $\int \frac{1-x^{p-1}}{1-x} dx = \sum_{n=1}^{p-1} \frac{1}{n} = A + Z'(p) \text{ } [p^2 < 1] \text{ (VIII, 320, 602).}$
- 3) $\int \frac{1-x^p}{1-x} x^{q-1} dx = Z'(p+q) - Z'(q) \text{ (VIII, 602)}$
- 4) $\int \frac{x^q - x^p}{1-x} dx = Z'(1+p) - Z'(1+q) \text{ } [p^2 < 1, q^2 < 1] \text{ (VIII, 602).}$
- 5) $\int \frac{(1-x)^{q-r-1} x^{r-1} dx}{1-px} = \frac{\Gamma(r)\Gamma(q-r)}{\Gamma(q)} \sum_{n=0}^{\infty} \frac{r^{n/1}}{q^{n/1}} p^n \text{ } [q > r > 0] \text{ (VIII, 475).}$
- 6) $\int \frac{1-q^x x^x}{1-qx} (1-x)^p dx = \sum_{n=1}^{\infty} \frac{q^{n-1} 1^{n-1/1}}{(p+1)^{n-1/1}} \text{ (VIII, 475).}$
- 7) $\int \frac{x^p dx}{1+x^2} = \frac{1}{4} Z' \left(\frac{p+3}{4} \right) - \frac{1}{4} Z' \left(\frac{p+1}{4} \right) \text{ V. T. 2, N. 1.}$
- 8) $\int \frac{dx}{1-p^2 x^2} = \frac{1}{2p} l \frac{1+p}{1-p} \text{ } [p^2 < 1] \text{ (VIII, 323).}$
- 9) $\int \frac{x^p - x^q}{1-x^2} dx = \frac{1}{2} Z' \left(\frac{q+1}{2} \right) - \frac{1}{2} Z' \left(\frac{p+1}{2} \right) \text{ V. T. 2, N. 4.}$
- 10) $\int \frac{1-x^2}{1-x^4} dx = \frac{1}{8} \pi + \frac{3}{4} l 2 \text{ (IV, 30).}$
- 11) $\int \frac{1-x}{1-x^4} x^2 dx = -\frac{1}{8} \pi + \frac{3}{4} l 2 \text{ (IV, 30).}$
- 12) $\int \frac{dx}{x^{1-p} + x^{1+p}} = \frac{\pi}{4p} \text{ V. T. 4, N. 14.}$
- 13) $\int \frac{x^{p-1} dx}{1+x^q} = \frac{1}{2q} Z' \left(\frac{p+q}{2q} \right) - \frac{1}{2q} Z' \left(\frac{p}{2q} \right) \text{ V. T. 2, N. 1.}$
- 14) $\int \frac{x^{p-1} + x^{q-p-1}}{1+x^q} dx = \frac{\pi}{q} \operatorname{Cosec} \frac{p\pi}{q} \text{ (IV, 30).}$
- 15) $\int \frac{x^{q-1} dx}{1-x^b} = -\frac{1}{b} \sum_{n=1}^b \operatorname{Cos} \frac{2qn\pi}{b} . l \operatorname{Sin} \frac{n\pi}{b} - \frac{\pi}{b^2} \sum_{n=1}^b n \operatorname{Sin} \frac{2qn\pi}{b} \text{ (IV, 31).}$
- 16) $\int \frac{x^{p-1} - x^{q-p-1}}{1-x^q} dx = \frac{\pi}{q} \operatorname{Cot} \frac{p\pi}{q} \text{ (IV, 31).}$
- 17) $\int \frac{x^{q-1} - x^{p-1}}{1-x^q} dx = \frac{1}{q} \left\{ A + Z' \left(\frac{p}{q} \right) \right\} \text{ (IV, 31).}$
- 18) $\int \frac{x^{q-1} + x^{p-1}}{x^{p+q} + 1} dx = \frac{\pi}{p+q} \operatorname{Sec} \left(\frac{q-p}{q+p} \frac{\pi}{2} \right) \text{ V. T. 4, N. 14.}$
- 19) $\int \frac{x^{q-1} - x^{p-1}}{x^{p+q} - 1} dx = \frac{\pi}{p+q} \operatorname{Tang} \left(\frac{q-p}{q+p} \frac{\pi}{2} \right) \text{ V. T. 4, N. 15.}$

- $$1) \int \frac{x^{a-1} dx}{(1+x)^b} = \frac{1}{2^a} \sum_0^\infty \binom{b-a-1}{n} \frac{1}{(a+n)(-2)^n} \text{ (IV, 31).}$$
- $$2) \int \frac{x^{p-1} dx}{(1+x)^{2p}} = \frac{1}{2^{2p}} \frac{\Gamma(p)}{\Gamma(p+\frac{1}{2})} \sqrt{\pi} \text{ (VIII, 295).}$$
- $$3) \int \frac{x^{q-1} + x^{p-1}}{(1+x)^{p+q}} dx = \frac{\Gamma(p)\Gamma(q)}{\Gamma(p+q)} \text{ (VIII, 320).}$$
- $$4) \int \frac{x^p dx}{(1-x)^p} = \frac{p\pi}{\sin p\pi} [p^2 < 1] \text{ V. T. 1, N. 5.}$$
- $$5) \int \frac{x^p dx}{(1-x)^{p+1}} = -\frac{\pi}{\sin p\pi} [p^2 < 1] \text{ V. T. 1, N. 5.}$$
- $$6) \int \frac{x^{p+1} dx}{(1-x)^p} = \frac{1+p}{2} \frac{p\pi}{\sin p\pi} [p^2 < 1] \text{ V. T. 1, N. 5.}$$
- $$7) \int \frac{x^{q-2} dx}{(1+px)^q} = \frac{(1+p)^{1-q}}{q-1} \text{ V. T. 3, N. 8.}$$
- $$8) \int \frac{x^{p-1} (1-x)^{q-1} dx}{(1+sx)^{p+q}} = \frac{1}{(1+s)^p} \frac{\Gamma(p)\Gamma(q)}{\Gamma(p+q)} \text{ (VIII, 513).}$$
- $$9) \int \frac{x^{p-1} (1-x)^{q-1} dx}{(1+sx)^r} = \frac{\Gamma(p)\Gamma(q)}{\Gamma(p+q)} \sum_0^\infty \frac{s^{n/1}}{1^{n/1}} \frac{p^{n/1}}{(p+q)^{n/1}} s^n \text{ (VIII, 513).}$$
- $$10) \int \frac{x^{r-1} (1-x)^{q-r-1} dx}{(1+sx)^p} = \frac{\Gamma(r)\Gamma(q-r)}{\Gamma(q)} \sum_0^\infty \binom{p}{n} \frac{s^{n/1}}{q^{n/1}} s^n \text{ (VIII, 476).}$$
- $$11) \int \frac{x^q dx}{(1+x^2)^2} = \frac{1-q}{8} \left\{ Z' \left(\frac{q+3}{4} \right) - Z' \left(\frac{q+1}{4} \right) \right\} + \frac{1}{4} \text{ (IV, 32).}$$
- $$12) \int \frac{x^{2p-3} dx}{(1-x^2)^p} = \frac{\Gamma(2p-1)\Gamma(1-p)}{2^{2p-1}\Gamma(p)} \text{ (IV, 33).}$$
- $$13) \int \frac{x^{p-1} + x^{-p-1}}{(1+x^q)^2} x^{q-1} dx = \frac{\pi}{q^2} \frac{p}{e^{\frac{p\pi}{q}} - e^{-\frac{p\pi}{q}}} \text{ (IV, 33).}$$

- $$1) \int \frac{x^{p-1} + x^{-p}}{1+x} dx = \pi \operatorname{Cosec} p\pi \text{ (VIII, 486).}$$
- $$2) \int \frac{x^p - x^{-p}}{1+x} dx = \frac{1}{p} - \pi \operatorname{Cosec} p\pi \text{ (VIII, 532).}$$
- $$3) \int \frac{x^{-p} - x^p}{1-x} dx = \frac{1}{p} - \pi \operatorname{Cot} p\pi \text{ (VIII, 620).}$$
- $$4) \int \frac{x^{p-1} - x^{-p}}{1-x} dx = \pi \operatorname{Cot} p\pi \text{ (VIII, 485).}$$
- $$5) \int \frac{x^q - x^p}{1-x} \frac{dx}{x} = Z'(p) - Z'(q) \text{ (IV, 33).}$$
- $$6) \int \left(\frac{1-x}{x} \right)^p \frac{dx}{1-x} = \pi \operatorname{Cosec} p\pi \text{ (VIII, 486).}$$
- $$7) \int \frac{x^p + x^{-p}}{1+x^2} dx = \frac{1}{2} \pi \operatorname{Sec} \frac{1}{2} p\pi [p < 1] \text{ (VIII, 296).}$$
- $$8) \int \frac{x^p - x^{-p}}{1+x^2} x dx = \frac{1}{p} - \frac{1}{2} \pi \operatorname{Cosec} \frac{1}{2} p\pi \text{ V. T. 4, N. 2.}$$
- $$9) \int \frac{(x^p + x^{-p})(x^q + x^{-q})}{1+x^2} dx = 2\pi \frac{\operatorname{Cos} \frac{1}{2} p\pi \cdot \operatorname{Cos} \frac{1}{2} q\pi}{\operatorname{Cos} p\pi + \operatorname{Cos} q\pi} [p < 1, q < 1] \text{ V. T. 27, N. 5.}$$

- 10) $\int \frac{(x^p - x^{-p})(x^q - x^{-q})}{1 + x^2} dx = 2\pi \frac{\sin \frac{1}{2} p \pi \cdot \sin \frac{1}{2} q \pi}{\cos p \pi + \cos q \pi} [p < 1, q < 1] \text{ V. T. 27, N. 6.}$
- 11) $\int \frac{x^p - x^{-p}}{1 - x^2} dx = -\frac{1}{2} \pi \operatorname{Tg} \frac{1}{2} p \pi \text{ (VIII, 531).}$
- 12) $\int \frac{x^p - x^{-p}}{1 - x^2} x dx = \frac{1}{2} \pi \operatorname{Cot} \frac{1}{2} p \pi - \frac{1}{p} \text{ V. T. 4, N. 3.}$
- 13) $\int \frac{(x^p - x^{-p})(x^q + x^{-q})}{1 - x^2} dx = \frac{-\pi \sin p \pi}{\cos p \pi + \cos q \pi} [p < 1] \text{ V. T. 27, N. 11.}$
- 14) $\int \frac{x^q + x^{-q}}{x^p + x^{-p}} \frac{dx}{x} = \frac{\pi}{2p} \operatorname{Sec} \frac{q \pi}{2p} \text{ (VIII, 296*)}. \quad 15) \int \frac{x^q - x^{-q}}{x^p - x^{-p}} \frac{dx}{x} = \frac{\pi}{2p} \operatorname{Tang} \frac{q \pi}{2p} \text{ (VIII, 296*)}.$
- 16) $\int \frac{1}{(x^q + x^{-q})^{2p}} \frac{dx}{x} = \frac{\{\Gamma(p)\}^2}{4q \cdot \Gamma(2p)} \text{ V. T. 27, N. 17.}$
- 17) $\int \frac{x^{q-p} + x^{p-q}}{(x + \frac{1}{x})^{p+q}} \frac{dx}{x} = \frac{1}{2} \frac{\Gamma(p) \Gamma(q)}{\Gamma(p+q)} \text{ V. T. 3, N. 3.}$
- 18) $\int \frac{(x - \frac{1}{x})^{2q}}{(x^2 + \frac{1}{x^2})^{p+\frac{1}{2}}} (x + \frac{1}{x}) \frac{dx}{x} = \cos q \pi \cdot 2^{q-p-1} \frac{\Gamma(q + \frac{1}{2}) \Gamma(p - q)}{\Gamma(p + \frac{1}{2})} \text{ (VIII, 293).}$

- 1) $\int \frac{x^{q-1}}{(1-x)^q} \frac{dx}{1+x} = \frac{\pi}{(1+p)^q} \operatorname{Cosec} q \pi \text{ (VIII, 513).}$
- 2) $\int \frac{x^{q-1}}{(1-x)^q} \frac{dx}{x+p} = \frac{p^{q-1}}{(1+p)^q} \pi \operatorname{Cosec} q \pi \text{ (VIII, 624).}$
- 3) $\int \frac{1-x^a}{(1+x)^{a+1}} \frac{dx}{1-x} = \frac{1}{2^{a+1}} \sum_{n=1}^a \frac{2^n}{n} \text{ (IV, 35).}$
- 4) $\int \frac{x^{q-1}}{(1-x)^{1-r}} \frac{dx}{(x+p)^{q+r}} = \frac{\Gamma(q) \Gamma(r)}{\Gamma(q+r)} \frac{1}{p^r (1+p)^q} \text{ (VIII, 624).}$
- 5) $\int \frac{x^{r-1}}{(1-x)^r} \frac{dx}{(1+px)^a} = \frac{\pi}{\sin r \pi} \frac{1}{(1+p)^r} \sum_{n=0}^{\infty} (-1)^n \binom{a-1}{n} \binom{r}{n} \left(\frac{p}{1+p}\right)^n \text{ (IV, 35).}$
- 6) $\int \frac{x^{r+p-2}}{(1-x)^p} \frac{dx}{(1+qx)^r} = (1+q)^{1-r-p} \frac{\Gamma(r+p-1) \Gamma(1-p)}{\Gamma(r)} [r+p > 1 > p, q+1 > 0] \text{ (IV, 35).}$
- 7) $\int \frac{x^{r-1}}{(1-x)^r} \frac{dx}{(1+px)(1+qx)} = \frac{\pi}{(p-q) \sin r \pi} \left\{ \frac{p}{(1+p)^r} - \frac{q}{(1+q)^r} \right\} \text{ (VIII, 338).}$

- 8) $\int \frac{1}{(1-x)^{1-p} x^p} \frac{dx}{q-rx} = \frac{\pi}{(q-r)^{1-p} q^p \operatorname{Sin} p \pi} [p < 1, q \geq r] \text{ (VIII, 559).}$
- 9) $\int \frac{1}{(1-x)^{1-p} x^p} \frac{dx}{(q-rx)^{a+1}} = \frac{p^{a+1}}{1^{a+1}} \frac{\pi \operatorname{Cosec} p \pi}{q^p (q-r)^{a+1-p}} \sum_0^a \frac{(1-p)(2-p) \dots (a-p-n)}{(a+p-1)(a+p-2) \dots (p+n)} \binom{a}{n} \left(\frac{q-r}{q}\right)^n \left[\begin{matrix} p < 1, \\ q \geq r \end{matrix} \right] \text{ (IV, 35).}$
- 10) $\int \left[\frac{x^{q-1}}{1+px} + \frac{x^{-q}}{p+x} \right] dx = \frac{\pi}{p^q} \operatorname{Cosec} q \pi \text{ (VIII, 631).}$
- 11) $\int \left[\frac{x^{q-1}}{1-px} - \frac{x^{-q}}{p-x} \right] dx = \frac{\pi}{p^q} \operatorname{Cot} q \pi \text{ (VIII, 631).}$
- 12) $\int \left[\frac{x^{p-1}}{1-x} - \frac{qx^{p-1}}{1-x^q} \right] dx = lq \text{ (VIII, 268).}$
- 13) $\int \left[\frac{bx^{b-1}}{1-x^b} - \frac{x^{a-b-1}}{1-x} \right] dx = A + \frac{1}{b} \sum_1^b Z' \left(a + \frac{b-n}{b} \right) \text{ (IV, 35).}$
- 14) $\int \left[\frac{1}{1-x} - \frac{px^{p-1}}{1-x^p} \right] dx = lp \text{ (VIII, 267).}$
- 15) $\int \left[\frac{e^{p i}}{1+e^{ap i} x^a} + \frac{e^{-p i}}{1+e^{-ap i} x^a} \right] dx = 2 \sum_0^\infty \frac{(-1)^n}{na+1} \operatorname{Cos} \{(na+1)p\} \left\{ \begin{array}{l} [a^2 p^2 < \pi^2] \text{ (IV, 36).} \\ [a^2 p^2 > \pi^2] \end{array} \right.$
- 16) $\int \left[\frac{e^{p i}}{1+e^{ap i} x^a} - \frac{e^{-p i}}{1+e^{-ap i} x^a} \right] dx = 2 \sum_0^\infty \frac{(-1)^n}{na+1} \operatorname{Sin} \{(na+1)p\} \left\{ \begin{array}{l} [a^2 p^2 < \pi^2] \\ [a^2 p^2 > \pi^2] \end{array} \right.$

- 1) $\int \frac{dx}{1-2px+x^2} = \frac{1}{\sqrt{1-p^2}} \operatorname{Arctg} \left(\sqrt{\frac{1+p}{1-p}} \right) [p^2 < 1], = \frac{1}{2\sqrt{p^2-1}} l\{p - \sqrt{p^2-1}\} [p^2 > 1] \text{ (VIII, 217, 230).}$
- 2) $\int \frac{x dx}{1-2px+x^2} = \frac{1}{2} l\{2(1-p)\} + \frac{p}{\sqrt{1-p^2}} \operatorname{Arctg} \left(\sqrt{\frac{1+p}{1-p}} \right) [p^2 < 1], = \frac{1}{2} l\{2(p-1)\} - \frac{p}{2\sqrt{p^2-1}} l\{p + \sqrt{p^2-1}\} [p^2 > 1] \text{ (VIII, 219, 232).}$
- 3) $\int \frac{dx}{1+2x \operatorname{Cos} \lambda + x^2} = \frac{1}{2} \lambda \operatorname{Cosec} \lambda \text{ (VIII, 196).}$
- 4) $\int \frac{x dx}{1+2x \operatorname{Cos} \lambda + x^2} = l\left(2 \operatorname{Cos} \frac{1}{2} \lambda\right) - \frac{1}{2} \lambda \operatorname{Cot} \lambda \text{ (VIII, 199).}$
- 5) $\int \frac{1-x}{1-2x \operatorname{Cos} \lambda + x^2} dx = \operatorname{Cosec} \lambda \cdot \sum_1^\infty \frac{\operatorname{Sin} n \lambda}{n(n+1)} \text{ (VIII, 476).}$

- 6) $\int \frac{1-x^2}{1+2x\cos\lambda+x^2} dx = \cos\lambda \cdot l\{2(1+\cos\lambda)\} + \lambda \sin\lambda - i$ (VIII, 338).
- 7) $\int \frac{x^r dx}{1+2x\cos\frac{a\pi}{b}+x^2} = \frac{1}{2b} \operatorname{Cosec} \frac{a\pi}{b} \cdot \sum_0^{b-1} (-1)^{n-1} \sin \frac{na\pi}{b} \cdot \left\{ Z' \left(\frac{b+c+n}{2b} \right) - Z' \left(\frac{c+n}{2b} \right) \right\}$
 $\left[\begin{smallmatrix} a+b \\ \text{impair} \end{smallmatrix} \right] = \frac{1}{b} \operatorname{Cosec} \frac{a\pi}{b} \cdot \sum_0^{\frac{b-1}{2}} (-1)^{n-1} \sin \frac{na\pi}{b} \cdot \left\{ Z' \left(\frac{b+c-n}{b} \right) - Z' \left(\frac{c+n}{b} \right) \right\} \left[\begin{smallmatrix} a+b \\ \text{pair} \end{smallmatrix} \right]$ (IV, 37).
- 8) $\int \frac{x^p + x^{-p}}{1+2x\cos\lambda+x^2} dx = \frac{\pi \sin p\lambda}{\sin p\pi \cdot \sin\lambda} [p < 1]$ (VIII, 321).
- 9) $\int \frac{1-x\cos\lambda}{1-2x\cos\lambda+x^2} x^{r-1} dx = \sum_0^\infty \frac{\cos n\lambda}{n+r}$
 10) $\int \frac{x^r dx}{1-2x\cos\lambda+x^2} = \operatorname{Cosec} \lambda \cdot \sum_1^\infty \frac{\sin n\lambda}{n+r}$ } Del Grosso. Mem. Nap. T. 2, 37.
- 11) $\int \frac{1-x\cos\lambda - x^{a+1}\cos\{(a+1)\lambda\} + x^{a+2}\cos a\lambda}{1-2x\cos\lambda+x^2} dx = \sum_0^a \frac{\cos n\lambda}{n+1}$ (VIII, 475).
- 12) $\int \frac{\sin\lambda - x^a \sin\{(a+1)\lambda\} + x^{a+1} \sin a\lambda}{1-2x\cos\lambda+x^2} x dx = \sum_1^a \frac{\sin n\lambda}{n+1}$ (VIII, 476).
- 13) $\int \frac{\sin\lambda - q^a x^a \sin\{(a+1)\lambda\} + q^{a+1} x^{a+1} \sin a\lambda}{1-2qx\cos\lambda+q^2 x^2} (1-x)^p dx = \Gamma(p+1) \sum_1^a \frac{q^{n-1} \sin n\lambda}{\Gamma(n+p+1)} 1^{n-1/2}$ (VIII, 476).
- 14) $\int \frac{\cos\lambda - qx - q^a x^a \cos\{(a+1)\lambda\} + q^{a+1} x^{a+1} \cos a\lambda}{1-2qx\cos\lambda+q^2 x^2} (1-x)^p dx = \Gamma(p+1) \sum_1^a \frac{q^{n-1} \cos n\lambda}{\Gamma(n+p+1)} 1^{n-1/2}$ (VIII, 476).
- 15) $\int \frac{1+x^2}{1-2x^2\cos\lambda+x^4} dx = \frac{1}{4}\pi \operatorname{Cosec} \frac{1}{2}\lambda$ (VIII, 218).
- 16) $\int \frac{x^{a-b-1} + x^{a+b-1}}{1-2x^a\cos\lambda+x^{2a}} dx = \frac{\pi \sin \frac{b\lambda}{a}}{a \sin \lambda \cdot \sin \frac{b\pi}{a}}$ V. T. 6, N. 8.
- 17) $\int \frac{x^c dx}{(1+2x\cos\frac{a\pi}{b}+x^2)^2} = \frac{1}{4b \sin^2 \frac{a\pi}{b}} \left\{ \frac{1}{2} + \sum_0^{b-1} (-1)^{n-1} \sin \frac{na\pi}{b} \cdot \left[(1-c) \left\{ Z' \left(\frac{b+c+n}{2b} \right) - Z' \left(\frac{c+n}{2b} \right) \right\} - c \cos \frac{a\pi}{b} \cdot \left\{ Z' \left(\frac{b+c+n-1}{2b} \right) - Z' \left(\frac{c+n-1}{2b} \right) \right\} \right] \right\} \left[\begin{smallmatrix} a+b \\ \text{impair} \end{smallmatrix} \right] =$
 $= \frac{1}{2b \sin^2 \frac{a\pi}{b}} \left\{ \frac{1}{2} + \sum_0^{\frac{b-1}{2}} (-1)^{n-1} \sin \frac{na\pi}{b} \cdot \left[(1-c) \left\{ Z' \left(\frac{b+c-n}{b} \right) - Z' \left(\frac{c+n}{b} \right) \right\} - c \cos \frac{a\pi}{b} \cdot \left\{ Z' \left(\frac{b+c-n-1}{b} \right) - Z' \left(\frac{c+n-1}{b} \right) \right\} \right] \right\} \left[\begin{smallmatrix} a+b \\ \text{pair} \end{smallmatrix} \right]$ V. T. 6, N. 7.

$$\begin{aligned}
 18) \int \frac{x^{1+p} + x^{1-p}}{(1 + 2x \cos \lambda + x^2)^2} dx &= \frac{\pi \operatorname{Cosec} p \pi}{2 \sin^2 \lambda} \{p \sin \lambda \cdot \cos p \lambda - \cos \lambda \cdot \sin p \lambda\} \text{ V. T. 6, N. 8.} \\
 19) \int \frac{x^p + x^{-p}}{x^q + 2 \cos \lambda + x^{-q}} \frac{dx}{x} &= \frac{\pi}{q} \frac{\sin \frac{p \lambda}{q}}{\sin \lambda \cdot \sin \frac{p \pi}{q}} \text{ V. T. 6, N. 8.} \\
 20) \int \frac{x^p - 2 \cos \lambda + x^{-p}}{x^q - 2 \cos \mu + x^{-q}} \frac{dx}{x} &= \frac{\pi}{q} \frac{\sin \left(\frac{\pi - \mu}{q} p \right)}{\sin \mu \cdot \sin \frac{p \pi}{q}} - \frac{\pi - \mu}{q \sin \mu} \cos \lambda \text{ V. T. 6, N. 3 et 8.} \\
 21) \int \frac{x^{q-1}}{1 + 2p x \cos \lambda + p^2 x^2} \frac{dx}{(1-x)^q} &= \frac{\pi}{\sin q \pi \cdot \sin \lambda \cdot (1 + 2p \cos \lambda + p^2)^{\frac{1}{2}q}} \sin \left\{ \lambda - q \operatorname{Arctg} \left(\frac{p \sin \lambda}{1 + p \cos \lambda} \right) \right\} \\
 &\quad \text{(IV, 38).}
 \end{aligned}$$

$$\begin{aligned}
 1) \int (1-x^2)^{a-\frac{1}{2}} dx &= \frac{1^{a/2}}{1^{a/2}} \frac{\pi}{2^{a+1}} \text{ V. T. 8, N. 13.} \\
 2) \int x^{2a-1} dx \sqrt{1-x^2} &= \frac{2^{a-1/2}}{3^{a/2}} \text{ (VIII, 238).} \\
 3) \int x^{2a} dx \sqrt{1-x^2} &= \frac{3^{a-1/2}}{4^{a/2}} \frac{\pi}{4} \text{ (VIII, 238).} \\
 4) \int x^{2a} (1-x^2)^{b-\frac{1}{2}} dx &= \frac{1^{a/2} 1^{b/2}}{1^{a+b/2}} \frac{\pi}{2^{a+b+1}} \text{ (VIII, 238).} \\
 5) \int x^{2a-1} (1-x^2)^{b-\frac{1}{2}} dx &= \frac{2^{a-1/2}}{(2b+1)^{a/2}} \text{ (VIII, 238).} \\
 6) \int (1-x^2)^{1-\frac{1}{2}q} (1-p^2 x^2)^{1-\frac{1}{2}q} x^q dx &= \frac{\Gamma \left(\frac{q+1}{2} \right) \Gamma \left(2 - \frac{q}{2} \right)}{\sqrt{\pi} (q-1) (q-3) (q-5)} \frac{1}{p^3} \left\{ \frac{1+(q-3)p+p^2}{(1+p)^{q-3}} - \right. \\
 &\quad \left. - \frac{1-(q-3)p+p^2}{(1-p)^{q-3}} \right\} \text{ (IV, 39).} \\
 7) \int (1-\sqrt{x})^{p-1} dx &= \frac{2}{p(p+1)} \text{ (VIII, 320).} \quad 8) \int (1-x)^{r-1} \frac{dx}{\sqrt{x}} = \frac{\Gamma(r) \sqrt{\pi}}{\Gamma(r+\frac{1}{2})} \text{ (VIII, 295).}
 \end{aligned}$$

$$\begin{aligned}
 1) \int \frac{x^a dx}{\sqrt{1-x}} &= 2 \frac{2^{a/2}}{3^{a/2}} \text{ (VIII, 289*).} & 2) \int \frac{x^{a-\frac{1}{2}} dx}{\sqrt{1-x}} &= \frac{1^{a/2}}{2^{a/2}} \pi \text{ V. T. 8, N. 13.} \\
 3) \int dx \sqrt{\frac{1-p^2 x}{1-x}} &= 1 + \frac{1-p^2}{2p} \ln \frac{1+p}{1-p} [p < 1] \text{ V. T. 53, N. 2.}
 \end{aligned}$$

$$4) \int x dx \sqrt{\frac{1-p^2 x}{1-x}} = \frac{3p^2-1}{4p^2} + \frac{1+3p^2}{8} \frac{1-p^2}{p^2} \ell \frac{1+p}{1-p} \text{ V. T. 53, N. 9.}$$

$$5) \int x^2 dx \sqrt{\frac{1-p^2 x}{1-x}} = \frac{(5p^2-3)(3p^2+1)}{24p^4} + \frac{1+2p^2+5p^4}{16} \frac{1-p^2}{p^2} \ell \frac{1+p}{1-p} \text{ V. T. 53, N. 18.}$$

$$6) \int dx \sqrt{\frac{(1-p^2 x)^2}{1-x}} = \frac{5-3p^2}{4} + \frac{3}{8} \frac{(1-p^2)^2}{p} \ell \frac{1+p}{1-p} \text{ V. T. 54, N. 2.}$$

$$7) \int x dx \sqrt{\frac{(1-p^2 x)^2}{1-x}} = \frac{-3+22p^2-15p^4}{24p^2} + \frac{1+5p^2}{16} \frac{(1-p^2)^2}{p^2} \ell \frac{1+p}{1-p} \text{ V. T. 54, N. 5.}$$

[Dans N. 3 à 7 on a $p < 1$]

$$8) \int \frac{x^{a-1} + x^{a-\frac{1}{2}} - 2x^{2a-1}}{1-x} dx = 2 \ell 2 \text{ (IV, 47).}$$

$$9) \int \frac{x^{a-1} + x^{a-\frac{1}{2}} + x^{a-\frac{1}{2}} - 3x^{2a-1}}{1-x} dx = 3 \ell 3 \text{ (IV, 47).}$$

$$10) \int \frac{x^{p-\frac{1}{2}} dx}{(1-x)^{2p}} = \frac{2^{1-2p}}{1-2p} \frac{\Gamma(p+\frac{1}{2})\Gamma(1-p)}{\sqrt{\pi}} [p < \frac{1}{2}] \text{ (IV, 48).}$$

$$11) \int \frac{x^{p+\frac{1}{2}} dx}{(1-x)^{p+\frac{1}{2}}} = \frac{2p+1}{2} \pi \sec p \pi \text{ V. T. 3, N. 4.}$$

$$12) \int \frac{x^{p-\frac{1}{2}} dx}{(1-x)^{p+\frac{1}{2}}} = \pi \sec p \pi \text{ V. T. 3, N. 5.}$$

$$13) \int \frac{x^{a/2} dx}{\sqrt{1-x^2}} = \frac{1^{a/2}}{2^{a/2}} \frac{\pi}{2} \text{ (VIII, 239).}$$

$$14) \int \frac{x^{2a-1} dx}{\sqrt{1-x^2}} = \frac{2^{a-1/2}}{1^{a/2}} \text{ (VIII, 239).}$$

$$15) \int dx \sqrt{\frac{1-p^2 x^2}{1-x^2}} = E'(p) \text{ (VIII, 549).}$$

$$16) \int x^2 dx \sqrt{\frac{1-p^2 x^2}{1-x^2}} = \frac{1}{3p^2} [(1-p^2)F'(p) - (1-2p^2)E'(p)] \text{ (VIII, 549).}$$

$$17) \int x^4 dx \sqrt{\frac{1-p^2 x^2}{1-x^2}} = \frac{1}{15p^4} [2(1+2p^2)(1-p^2)F'(p) - (2+3p^2-8p^4)E'(p)] \text{ V. T. 53, N. 13.}$$

$$18) \int x^6 dx \sqrt{\frac{1-p^2 x^2}{1-x^2}} = \frac{1}{105p^6} [(8+13p^2+24p^4)(1-p^2)F'(p) - (8+9p^2+16p^4-48p^6)E'(p)] \text{ V. T. 53, N. 24.}$$

$$19) \int dx \sqrt{\frac{(1-p^2 x^2)^2}{1-x^2}} = \frac{2-p^2}{3} 2E'(p) - \frac{1-p^2}{3} F'(p) \text{ (VIII, 549).}$$

$$20) \int x^2 dx \sqrt{\frac{(1-p^2 x^2)^2}{1-x^2}} = \frac{1}{15p^2} [(3-4p^2)(1-p^2)F'(p) - (3-13p^2+8p^4)E'(p)] \text{ V. T. 54, N. 3.}$$

$$21) \int x^4 dx \sqrt{\frac{(1-p^2 x^2)^2}{1-x^2}} = \frac{1}{35p^4} [(2+5p^2-8p^4)(1-p^2)F'(p) - (1+2p^2-12p^4+8p^6)2E'(p)] \text{ V. T. 54, N. 7.}$$

[Dans N. 15 à 21 on a $p < 1$]

$$22) \int \frac{dx \sqrt{x}}{\sqrt{1-x^2}} = \frac{1-\sqrt{3}}{\sqrt{3}} F' \left(\cos \frac{\pi}{12} \right) + 2 \sqrt{3} \cdot E' \left(\cos \frac{\pi}{12} \right) \text{ (VIII, 301).}$$

$$23) \int \frac{dx \sqrt{x^2}}{\sqrt{1-x^2}} = 3 \sqrt{3} \cdot E' \left(\sin \frac{\pi}{12} \right) - \frac{3+3\sqrt{3}}{2\sqrt{3}} F' \left(\sin \frac{\pi}{12} \right) \text{ (VIII, 302).}$$

$$24) \int \frac{x^{p-\frac{1}{2}} dx}{(1-x^2)^q} = \frac{2^{\frac{1}{2}-p}}{2p-1} \frac{\Gamma(p+\frac{1}{2})\Gamma(1-p)}{\sqrt{\pi}} \cdot \sin \left(\frac{2p-1}{4} \pi \right) [p < 1] \text{ (IV, 43).}$$

$$25) \int \frac{x^{p-1} + x^{q-1}}{(1-x^2)^{\frac{1}{2}(p+q)}} dx = \frac{\cos \left(\frac{q-p}{4} \pi \right)}{2 \cos \left(\frac{q+p}{4} \pi \right)} \frac{\Gamma(\frac{1}{2}p)\Gamma(\frac{1}{2}q)}{\Gamma\{\frac{1}{2}(p+q)\}} \text{ (IV, 44).}$$

$$26) \int \frac{x^{p-1} - x^{q-1}}{(1-x^2)^{\frac{1}{2}(p+q)}} dx = \frac{\sin \left(\frac{q-p}{4} \pi \right)}{2 \sin \left(\frac{q+p}{4} \pi \right)} \frac{\Gamma(\frac{1}{2}p)\Gamma(\frac{1}{2}q)}{\Gamma\{\frac{1}{2}(p+q)\}} \text{ (IV, 44).}$$

$$27) \int dx \sqrt{\frac{1-x^2}{1+x^2}} = \sqrt{2} \cdot \left[F' \left(\sin \frac{\pi}{4} \right) - E' \left(\sin \frac{\pi}{4} \right) \right] \text{ (VIII, 321).}$$

$$1) \int \frac{dx}{\sqrt{1-x^2}} = \frac{2}{\sqrt{27}} F' \left(\sin \frac{\pi}{12} \right) \text{ (IV, 44).}$$

$$2) \int \frac{dx}{\sqrt{1-x^2}} = \frac{2\pi}{3\sqrt{3}} =$$

$$3) \int \frac{x dx}{\sqrt{1-x^2}} \text{ (VIII, 292).}$$

$$4) \int \frac{x dx}{\sqrt{1-x^2}} = \frac{\sqrt{4}}{2\sqrt{3}} \frac{\pi}{F' \left(\cos \frac{\pi}{12} \right)} \text{ (IV, 44).}$$

$$5) \int \frac{dx}{\sqrt{1-x^2}} = \frac{4}{3\sqrt{4} \cdot \sqrt{3}} F' \left(\cos \frac{\pi}{12} \right) \text{ (IV, 44).} \quad 6) \int \frac{x^3 dx}{\sqrt{1-x^2}} = \frac{1^{a/3}}{3^{a/3}} \frac{2\pi}{3\sqrt{3}} \text{ (IV, 44).}$$

$$7) \int \frac{x^{3a-1} dx}{\sqrt{1-x^2}} = \frac{3^{a-1/3}}{2^{a/3}} \text{ (IV, 44).} \quad 8) \int \frac{dx}{\sqrt{1-x^2}} = \frac{1}{2} \sqrt{2} \cdot F' \left(\sin \frac{\pi}{4} \right) \text{ (VIII, 298).}$$

$$9) \int \frac{x^2 dx}{\sqrt{1-x^2}} = \sqrt{2} \cdot E' \left(\sin \frac{\pi}{4} \right) - \frac{1}{\sqrt{2}} F' \left(\sin \frac{\pi}{4} \right) \text{ (VIII, 321).}$$

$$10) \int \frac{dx}{\sqrt{1-x^2}} = \frac{\pi}{2\sqrt{2}} =$$

$$11) \int \frac{x^3 dx}{\sqrt{1-x^2}} \text{ (VIII, 292).}$$

$$12) \int dx \sqrt{\frac{1-p^2 x^2}{1-x^2}} = \frac{c F'(c) + b F'(b)}{(b+c)^2} + \frac{b-c}{(b+c)^2} \{E'(b) - E'(c)\} \left[\begin{array}{l} \text{où } b^2 = \frac{(1+\sqrt{p})^2}{2(1+p)}, \\ c^2 = \frac{(1-\sqrt{p})^2}{2(1+p)} \end{array} \right] \text{ (IV, 45).}$$

$$13) \int \frac{dx}{\sqrt{1-x^4}} = \frac{1}{\sqrt{2}} \frac{\pi}{3} E' \left(\sin \frac{\pi}{12} \right) \text{ (IV, 45).}$$

$$14) \int \frac{dx}{\sqrt{1-x^4}} = \frac{\pi}{3} =$$

$$15) \int \frac{x^4 dx}{\sqrt{1-x^4}} \text{ (VIII, 292).}$$

$$16) \int \frac{dx}{\sqrt{1-x^4}} = \frac{1}{\sqrt{2}} F' \left(\tan \frac{\pi}{8} \right) \text{ (IV, 45).}$$

$$17) \int \frac{dx}{\sqrt{1-x^{12}}} = \frac{1}{2\sqrt{3}} F' \left(\sin \frac{\pi}{4} \right) + \sin \frac{\pi}{12} \cdot F' \left(\frac{\sqrt{2-\sqrt{3}}}{1+\sqrt{3}} \right) \text{ (IV, 45).}$$

$$18) \int \frac{dx}{\sqrt{1-x^q}} = \frac{\pi}{q} \operatorname{Cosec} \frac{\pi}{q} =$$

$$19) \int \frac{x^{q-2} dx}{\sqrt{1-x^q}^{q-1}} \text{ (VIII, 292).}$$

$$20) \int \frac{x^{p-1} dx}{\sqrt{1-x^q}^p} = \frac{\pi}{q} \operatorname{Cosec} \frac{p\pi}{q} =$$

$$21) \int \frac{x^{q-p-1} dx}{\sqrt{1-x^q}^{q-p}} \text{ (VIII, 292).}$$

$$22) \int \frac{x^{q+p-1} dx}{\sqrt{1-x^q}^p} = \frac{p\pi}{q^2} \operatorname{Cosec} \frac{p\pi}{q} \text{ V. T. 3, N. 4.}$$

$$23) \int \frac{x^{\frac{q}{p}-1} dx}{\sqrt{1-x^q}} = \frac{\pi}{q} \operatorname{Cosec} \frac{\pi}{p} \text{ (VIII, 293).}$$

$$1) \int \frac{\sqrt{x} + \sqrt{\frac{1}{x}}}{1+x^2} dx = \frac{1}{2} \pi \sqrt{2} \text{ (IV, 47).}$$

$$2) \int \frac{x^a dx}{\sqrt{x(1-x)}} = \frac{1^{a/2}}{2^{a/2}} \pi \text{ (VIII, 289*)}$$

$$3) \int \frac{(1-x)^a dx}{\sqrt{x(1-x)}} = \frac{1^{a/2}}{2^{a/2}} \pi \text{ V. T. 8, N. 13.}$$

$$4) \int \frac{(1-x)^a x^b dx}{\sqrt{x(1-x)}} = \frac{1^{a/2} 1^{b/2}}{2^{a+b/2}} \pi \text{ V. T. 7, N. 4.}$$

$$5) \int \frac{dx}{x^{1/2} \sqrt{1-x^2}} = \frac{1}{\sqrt{2}} \frac{\pi}{3} F' \left(\cos \frac{\pi}{12} \right) \text{ (VIII, 301).}$$

$$6) \int \frac{dx}{x^{1/2} \sqrt{1-x^2}} = \frac{3}{\sqrt{2}} F' \left(\sin \frac{\pi}{12} \right) \text{ (VIII, 303).}$$

$$7) \int dx \sqrt{\frac{1-p^2 x}{x(1-x)}} = E'(p) \text{ V. T. 53, N. 1.}$$

$$8) \int dx \sqrt{\frac{(1-p^2 x)^2}{x(1-x)}} = 4 \frac{2-p^2}{3} E'(p) - \frac{1-p^2}{3} 2 F'(p) \text{ V. T. 54, N. 1.}$$

$$9) \int \frac{1}{q-px} \frac{dx}{\sqrt{x(1-x)}} = \frac{\pi}{\sqrt{q(q-p)}} \quad [0 < p < q] \text{ (VIII, 559).}$$

$$10) \int \frac{1}{(q-px)^{a+1}} \frac{dx}{\sqrt{x(1-x)}} = \frac{1^{a/2}}{2^{a/2}} \frac{\pi}{(q-p)^a \sqrt{q(q-p)}} \sum_{n=0}^{\infty} \binom{a}{n} \frac{1^{n/2}}{(2a-1)^{n/2-1}} \left(\frac{q-p}{q} \right)^n \quad [p \leq q] \text{ (IV, 48).}$$

$$11) \int \frac{dx}{\sqrt{x(p+x)(1+px)}} = F' \{ \sqrt{1-p^2} \} \text{ (VIII, 353).}$$

$$12) \int \frac{dx}{\sqrt{x(1-x)(1-p^2x)}} = 2F'(p) \text{ V. T. 57, N. 1.}$$

$$13) \int \frac{dx}{\sqrt{x(1-x)(1-p^2x)^3}} = \frac{2}{1-p^2} E'(p) \text{ V. T. 58, N. 1.}$$

$$14) \int \frac{dx}{\sqrt{x(1-x)(1-p^2x)^3}} = \frac{2}{3(1-p^2)^2} [2(2-p^2)E'(p) - (1-p^2)F'(p)] \text{ V. T. 59, N. 1.}$$

$$15) \int \frac{dx}{\sqrt{x(1-x)(1-px)(q+px)}} = \frac{2}{\sqrt{p+q}} F' \left\{ \sqrt{\frac{p(1+q)}{p+q}} \right\} \text{ (VIII, 312*)}.$$

$$16) \int \frac{p^2 - b^2 - 2p^2x}{\sqrt{x(b^2 + p^2x)(b^2 - p^2 + p^2x)(1-x)}} dx = -\frac{\pi}{2} \text{ (VIII, 296).}$$

$$17) \int \frac{1}{1-2x \cos \lambda + x^2} \frac{dx}{\sqrt{x}} = 2 \operatorname{Cosec} \lambda \cdot \sum_{n=0}^{\infty} \frac{\sin n\lambda}{2n-1} \text{ Del Grosso. Mem. Nap. T. 2, 37.}$$

$$1) \int \frac{x^{p-\frac{1}{2}} dx}{(1-x)^p (1+qx)^p} = \frac{2 \Gamma(p+\frac{1}{2}) \Gamma(1-p)}{\sqrt{\pi}} \operatorname{Cos}^2 p \{ \operatorname{Arctg}(\sqrt{q}) \} \cdot \frac{\sin \{ (2p-1) \operatorname{Arctg}(\sqrt{q}) \}}{(2p-1) \sin \{ \operatorname{Arctg}(\sqrt{q}) \}} \left[\begin{matrix} p \leq 1, \\ q \leq 1 \end{matrix} \right] \text{ (VIII, 513).}$$

$$2) \int \frac{x^{p-\frac{1}{2}} dx}{(1-x)^p (1-qx)^p} = \frac{\Gamma(p+\frac{1}{2}) \Gamma(1-p)}{\sqrt{\pi}} \frac{(1-\sqrt{q})^{1-2p} - (1+\sqrt{q})^{1-2p}}{(2p-1)\sqrt{q}}$$

$$3) \int \frac{dx}{(1-px)\sqrt{1-x}} = \frac{1}{2\sqrt{p(1-p)}} \operatorname{Arcsin}(\sqrt{p}) \text{ (VIII, 466*)}.$$

$$4) \int \frac{dx}{\sqrt{(1+p^2x)(1-x)}} = \frac{2}{p} \operatorname{Arctg} p \text{ V. T. 60, N. 5.}$$

$$5) \int \frac{x dx}{\sqrt{(1+p^2x)(1-x)}} = \frac{2}{p^2} \left(\operatorname{Arctg} p - \frac{p}{1+p^2} \right) \text{ V. T. 60, N. 6.}$$

$$6) \int \frac{dx}{\sqrt{(1-p^2x)(1-x)}} = \frac{1}{p} \operatorname{Arctg} \frac{1+p}{1-p} \text{ V. T. 57, N. 2.}$$

$$7) \int \frac{x dx}{\sqrt{(1-p^2x)(1-x)}} = -\frac{1}{p^2} + \frac{1+p^2}{2p^2} \operatorname{Arctg} \frac{1+p}{1-p} \text{ V. T. 57, N. 8.}$$

$$8) \int \frac{x^2 dx}{\sqrt{(1-p^2x)(1-x)}} = \frac{1}{4p^4} \left[-3(1+p^2) + \frac{3+2p^2+3p^4}{2p} \operatorname{Arctg} \frac{1+p}{1-p} \right] \text{ V. T. 57, N. 17.}$$

$$9) \int \frac{dx}{\sqrt{(1-x)(1-p^2x)^3}} = \frac{2}{1-p^2} \text{ V. T. 58, N. 2.}$$

- 10) $\int \frac{x dx}{\sqrt{(1-x)(1-p^2 x)^3}} = \frac{2}{(1-p^2)p^2} - \frac{1}{p^2} \ell \frac{1+p}{1-p}$ V. T. 58, N. 8.
- 11) $\int \frac{x^2 dx}{\sqrt{(1-x)(1-p^2 x)^3}} = \frac{1}{1-p^2} \left[2 \frac{3-p^2}{p^4} - \frac{3+p^2}{p^5} (1-p^2) \ell \frac{1+p}{1-p} \right]$ V. T. 58, N. 17.
- 12) $\int \frac{dx}{\sqrt{(1-x)(1-p^2 x)^3}} = 2 \frac{3-p^2}{3(1-p^2)^2}$ V. T. 59, N. 2.
- 13) $\int \frac{x dx}{\sqrt{(1-x)(1-p^2 x)^3}} = \frac{4}{3(1-p^2)^2}$ V. T. 59, N. 8.
- 14) $\int \frac{x^2 dx}{\sqrt{(1-x)(1-p^2 x)^3}} = \frac{2}{3(1-p^2)^2} \left[\frac{-3+5p^2}{p^4} + 3 \frac{(1-p^2)^2}{p^5} \ell \frac{1+p}{1-p} \right]$ V. T. 59, N. 17.
- 15) $\int \frac{dx \sqrt{x}}{\sqrt{(1-x)(1-p^2 x)}} = \frac{2}{p^2} [F'(p) - E'(p)]$ V. T. 57, N. 5.
- 16) $\int \frac{x dx \sqrt{x}}{\sqrt{(1-x)(1-p^2 x)}} = \frac{2}{3p^4} [(2+p^2)F'(p) - 2(1+p^2)E'(p)]$ V. T. 57, N. 12.
- 17) $\int \frac{x^2 dx \sqrt{x}}{\sqrt{(1-x)(1-p^2 x)}} = \frac{2}{15p^6} [(8+3p^2+4p^4)F'(p) - (8+7p^2+8p^4)E'(p)]$ V. T. 57, N. 23.
- 18) $\int \frac{dx \sqrt{x}}{\sqrt{(1-x)(1-p^2 x)^3}} = \frac{2}{(1-p^2)p^2} [E'(p) - (1-p^2)F'(p)]$ V. T. 58, N. 5.
- 19) $\int \frac{x dx \sqrt{x}}{\sqrt{(1-x)(1-p^2 x)^3}} = \frac{2}{(1-p^2)p^4} [(2-p^2)E'(p) - 2(1-p^2)F'(p)]$ V. T. 58, N. 12.
- 20) $\int \frac{x^2 dx \sqrt{x}}{\sqrt{(1-x)(1-p^2 x)^3}} = \frac{2}{3(1-p^2)p^6} [(8-3p^2-2p^4)E'(p) - (8+p^2)(1-p^2)F'(p)]$
V. T. 58, N. 23.
- 21) $\int \frac{dx \sqrt{x}}{\sqrt{(1-x)(1-p^2 x)^3}} = \frac{2}{3(1-p^2)^2 p^2} [(1+p^2)E'(p) - (1-p^2)F'(p)]$ V. T. 59, N. 5.
- 22) $\int \frac{x dx \sqrt{x}}{\sqrt{(1-x)(1-p^2 x)^3}} = \frac{2}{3(1-p^2)^2 p^4} [(2-3p^2)(1-p^2)F'(p) - 2(1-2p^2)E'(p)]$
V. T. 59, N. 12.
- 23) $\int \frac{x^2 dx \sqrt{x}}{\sqrt{(1-x)(1-p^2 x)^3}} = \frac{2}{3(1-p^2)^2 p^6} [(8-9p^2)(1-p^2)F'(p) - (8-13p^2+3p^4)E'(p)]$
V. T. 59, N. 23.

$$1) \int \frac{dx}{(p^2 - x^2) \sqrt{1-x^2}} = 0 \quad [p^2 < 1] = \frac{\pi}{2 \sqrt{p^2 - 1}} \quad [p^2 > 1] \quad (\text{VIII, 198}).$$

- 2) $\int \frac{1}{1+qx^2} \frac{dx}{\sqrt{1-x^2}} = \frac{\pi}{2\sqrt{1+q}}$ (VIII, 303).
- 3) $\int \frac{x^2}{1+qx^2} \frac{dx}{\sqrt{1-x^2}} = \frac{\pi}{2q} \left\{ 1 - \frac{1}{\sqrt{1+q}} \right\}$ (VIII, 357).
- 4) $\int \frac{x^4}{1+qx^2} \frac{dx}{\sqrt{1-x^2}} = \frac{\pi}{4q^2} \left\{ q - 2 + \frac{2}{\sqrt{1+q}} \right\}$ (VIII, 357).
- 5) $\int \frac{x}{1-p^2x^2} \frac{dx}{\sqrt{1-x^2}} = \frac{1}{p\sqrt{1-p^2}} \operatorname{Arcsin} p$ (VIII, 466*).
- 6) $\int \frac{xdx}{\sqrt{(p^2+x^2)(1-x^2)}} = \operatorname{Arccot} p$ (VIII, 197).
- 7) $\int \frac{dx}{\sqrt{(1-x^2)(1-p^2x^2)}} = F'(p)$ (VIII, 549).
- 8) $\int \frac{xdx}{\sqrt{(1-x^2)(1-p^2x^2)}} = \frac{1}{2p} \ell \frac{1+p}{1-p}$ V. T. 57, N. 2.
- 9) $\int \frac{x^2 dx}{\sqrt{(1-x^2)(1-p^2x^2)}} = \frac{1}{p^2} [F'(p) - E'(p)]$ (VIII, 549).
- 10) $\int \frac{x^3 dx}{\sqrt{(1-x^2)(1-p^2x^2)}} = -\frac{1}{2p^2} + \frac{1+p^2}{4p^3} \ell \frac{1+p}{1-p}$ V. T. 57, N. 8.
- 11) $\int \frac{x^4 dx}{\sqrt{(1-x^2)(1-p^2x^2)}} = \frac{1}{3p^4} [(2+p^2)F'(p) - (1+p^2)2E'(p)]$ (VIII, 549).
- 12) $\int \frac{x^5 dx}{\sqrt{(1-x^2)(1-p^2x^2)}} = \frac{1}{8p^5} \left[-3(1+p^2) + \frac{3+2p^2+3p^4}{2p} \ell \frac{1+p}{1-p} \right]$ V. T. 57, N. 17.
- 13) $\int \frac{x^6 dx}{\sqrt{(1-x^2)(1-p^2x^2)}} = \frac{1}{15p^6} [(8+3p^2+4p^4)F'(p) - (8+7p^2+8p^4)E'(p)]$ V. T. 57, N. 23.
- 14) $\int \frac{dx}{\sqrt{(1-x^2)(1-p^2x^2)^3}} = \frac{1}{1-p^2} E'(p)$ V. T. 58, N. 1.
- 15) $\int \frac{xdx}{\sqrt{(1-x^2)(1-p^2x^2)^3}} = \frac{1}{1-p^2}$ V. T. 58, N. 2.
- 16) $\int \frac{x^2 dx}{\sqrt{(1-x^2)(1-p^2x^2)^3}} = \frac{1}{(1-p^2)p^2} [E'(p) - (1-p^2)F'(p)]$ V. T. 58, N. 5.
- 17) $\int \frac{x^3 dx}{\sqrt{(1-x^2)(1-p^2x^2)^3}} = \frac{1}{(1-p^2)p^2} - \frac{1}{2p^3} \ell \frac{1+p}{1-p}$ V. T. 58, N. 8.
- 18) $\int \frac{x^4 dx}{\sqrt{(1-x^2)(1-p^2x^2)^3}} = \frac{1}{(1-p^2)p^4} [(2-p^2)E'(p) - 2(1-p^2)F'(p)]$ V. T. 58, N. 12.

- 19) $\int \frac{x^2 dx}{\sqrt{(1-x^2)(1-p^2 x^2)}} = \frac{1}{2} \frac{1}{1-p^2} \left[\frac{3-p^2}{p^4} - \frac{3+p^2}{2p^5} (1-p^2) \right] \frac{1+p}{1-p}$ V. T. 58, N. 17.
- 20) $\int \frac{x^2 dx}{\sqrt{(1-x^2)(1-p^2 x^2)}} = \frac{1}{3(1-p^2)p^6} [(8-3p^2-2p^4)E'(p) - (8+p^2)(1-p^2)F'(p)]$ V. T. 58, N. 23.
- 21) $\int \frac{dx}{\sqrt{(1-x^2)(1-p^2 x^2)}} = \frac{1}{3(1-p^2)^2} [2(2-p^2)E'(p) - (1-p^2)F'(p)]$ V. T. 59, N. 1.
- 22) $\int \frac{x dx}{\sqrt{(1-x^2)(1-p^2 x^2)}} = \frac{3-p^2}{3(1-p^2)^2}$ V. T. 59, N. 2.
- 23) $\int \frac{x^2 dx}{\sqrt{(1-x^2)(1-p^2 x^2)}} = \frac{1}{3(1-p^2)^2 p^2} [(1+p^2)E'(p) - (1-p^2)F'(p)]$ V. T. 59, N. 5.
- 24) $\int \frac{x^3 dx}{\sqrt{(1-x^2)(1-p^2 x^2)}} = \frac{2}{3(1-p^2)^2}$ V. T. 59, N. 8.
- 25) $\int \frac{x^4 dx}{\sqrt{(1-x^2)(1-p^2 x^2)}} = \frac{1}{3(1-p^2)^2 p^4} [(2-3p^2)(1-p^2)F'(p) - 2(1-2p^2)E'(p)]$ V. T. 59, N. 12.
- 26) $\int \frac{x^5 dx}{\sqrt{(1-x^2)(1-p^2 x^2)}} = \frac{1}{3(1-p^2)^2} \left[\frac{-3+5p^2}{p^4} + 3 \frac{(1-p^2)^2}{p^5} \right] \frac{1+p}{1-p}$ V. T. 59, N. 17.
- 27) $\int \frac{x^6 dx}{\sqrt{(1-x^2)(1-p^2 x^2)}} = \frac{1}{3(1-p^2)^2 p^6} [(8-9p^2)(1-p^2)F'(p) - (8-13p^2+3p^4)E'(p)]$ V. T. 59, N. 23.
- 28) $\int \frac{dx}{\sqrt{(1-x^2)(q^2-p^2 x^2)}} = \frac{1}{q} F'\left(\frac{p}{q}\right)$ (VIII, 298*).
- 29) $\int \frac{x^2 dx}{\sqrt{(1-x^2)(q^2-p^2 x^2)}} = \frac{q}{p^2} \left\{ F'\left(\frac{p}{q}\right) - E'\left(\frac{p}{q}\right) \right\}$ (VIII, 298*).
- 30) $\int \frac{x^4 dx}{\sqrt{(1-x^2)(q^2-p^2 x^2)}} = \frac{q}{p^4} \left\{ \frac{2q^2+p^2}{3} F'\left(\frac{p}{q}\right) - \frac{p^2+q^2}{3} 2E'\left(\frac{p}{q}\right) \right\}$ (VIII, 298*).
- 31) $\int \frac{1-x^2}{\sqrt{1+p^2 x^2}} \cdot \frac{1-p^2 q^2 x^2}{\sqrt{1+q^2 x^2}} x^2 dx = 0$ (IV, 49).
- 32) $\int \frac{x^{\frac{1}{2}} dx}{\{(1-x)(1-p^2 x)\}^{\frac{1}{2}(q+1)}} = \frac{(1-p)^{-q} - (1+p)^{-q}}{2pq\sqrt{\pi}} \Gamma\left(\frac{q+2}{2}\right) \Gamma\left(\frac{1-q}{2}\right)$ (VIII, 513).

1) $\int \frac{dx}{\sqrt{(p+qx)(1-x^2)}} = \frac{2}{\sqrt{p+q}} F\left(\frac{\pi}{4}, \sqrt{\frac{2q}{p+q}}\right)$ (VIII, 329).

- 2) $\int \frac{x dx}{\sqrt{(p+qx)(1-x^2)}} = \frac{2}{q} \sqrt{p+q} \cdot E\left(\frac{\pi}{4}, \sqrt{\frac{2q}{p+q}}\right) - \frac{2p}{q\sqrt{p+q}} F\left(\frac{\pi}{4}, \sqrt{\frac{2q}{p+q}}\right)$ (VIII, 329).
- 3) $\int \frac{dx}{\sqrt{(p-qx)(1-x^2)}} = \frac{2}{\sqrt{p+q}} \left\{ F'\left(\sqrt{\frac{2q}{p+q}}\right) - F\left(\frac{\pi}{4}, \sqrt{\frac{2q}{p+q}}\right) \right\}$ (VIII, 329).
- 4) $\int \frac{x dx}{\sqrt{(p-qx)(1-x^2)}} = \frac{2p}{q\sqrt{p+q}} \left\{ F'\left(\sqrt{\frac{2q}{p+q}}\right) - F\left(\frac{\pi}{4}, \sqrt{\frac{2q}{p+q}}\right) \right\} - \frac{2\sqrt{p+q}}{q} \left\{ E'\left(\sqrt{\frac{2q}{p+q}}\right) - E\left(\frac{\pi}{4}, \sqrt{\frac{2q}{p+q}}\right) \right\}$ (VIII, 329).
- 5) $\int \frac{dx}{\sqrt{(1-p^2x^2)(1-x^2)(p^2x^2+Tg^2\lambda)}} = \frac{1}{\sqrt{p^2+Tg^2\lambda}} F'\left\{ \frac{p}{\sqrt{\sin^2\lambda+p^2\cos^2\lambda}} \right\}$ (VIII, 312*).
- 6) $\int \frac{1}{1+x^4} \frac{dx}{\sqrt{1-x^4}} = \frac{\pi}{8} + \frac{1}{4} \sqrt{2} \cdot F'\left(\sin \frac{\pi}{4}\right)$ (IV, 48*). 7) $\int \frac{x^3}{1+x^4} \frac{dx}{\sqrt{1-x^4}} = \frac{\pi}{8}$ (IV, 48).
- 8) $\int \frac{x^4}{1+x^4} \frac{dx}{\sqrt{1-x^4}} = -\frac{\pi}{8} + \frac{1}{4} \sqrt{2} \cdot F'\left(\sin \frac{\pi}{4}\right)$ (IV, 48*).
- 9) $\int \left[\frac{x^{a-1}}{1-x} - \frac{px^{p+a-1}}{1-x} \right] dx = plp$ (IV, 49).
- 10) $\int \left[\frac{a}{1-x} - \frac{x^{p-1}}{1-\sqrt{x}} \right] dx = aA + \sum_1^a Z'\left(p + \frac{a-n}{a}\right)$ (IV, 49).

- 1) $\int \frac{dx \sqrt{x}}{1-2x \cos \lambda + x^2} = 2 \operatorname{Cosec} \lambda \cdot \sum_{n=0}^{\infty} \frac{\sin n\lambda}{2n+1}$ Del Grosso, Mem. Nap. T. 2, 37.
- 2) $\int \frac{x^{p+1}(1-x)^{p-1} dx}{(a+bx-cx^2)^{p+1}} = \frac{\Gamma(p+\frac{1}{2})}{\Gamma(p+1) \cdot \sqrt{a+b-c}} \frac{\sqrt{\pi}}{[c + \{\sqrt{a+b-c} + \sqrt{a}\}^2]^{p+\frac{1}{2}}}$
 $[c + \{\sqrt{a+b-c} + \sqrt{a}\}^2 > 0]$ Liouville, L. Sér. 2, T. 1, 421.
- 3) $\int \frac{dx}{\sqrt{3-3x^2+x^4}} = \frac{1}{3\sqrt{3}} F'\left(\cos \frac{\pi}{12}\right)$ (VIII, 301).
- 4) $\int \frac{x^2 dx}{\sqrt{3-3x^2+x^4}} = \frac{\sqrt{3}}{3} \left\{ F'\left(\cos \frac{\pi}{12}\right) - 2 E'\left(\cos \frac{\pi}{12}\right) \right\}$ (VIII, 301).
- 5) $\int \frac{dx}{1-2rx+r^2} \sqrt{\frac{1-x}{1+x}} = \frac{\pi}{4r} + \frac{1}{r} \frac{1-r}{1+r} \operatorname{Arctg} \left(\frac{1+r}{1-r} \right)$ V. T. 36, N. 11.
- 6) $\int \frac{dx}{1-2rx+r^2} \sqrt{\frac{1+x}{1-x}} = -\frac{\pi}{4r} - \frac{1}{r} \frac{1+r}{1-r} \operatorname{Arctg} \left(\frac{1+r}{1-r} \right)$ V. T. 36, N. 12.

- 7) $\int \frac{dx}{\sqrt{(1-x^2)(1-p^2+p^2x^2)}} = F(p) \text{ (VIII, 304).}$
- 8) $\int \frac{dx}{\sqrt{(1+x^2)(1+x^2-p^2x^2)}} = F\left(\frac{\pi}{4}, p\right) \text{ (VIII, 340).}$
- 9) $\int \frac{x^2 dx}{\sqrt{(1+x^2)(1+x^2-p^2x^2)}} = \frac{1}{1-p^2} \left\{ \sqrt{\frac{2-p^2}{2}} - E\left(\frac{\pi}{4}, p\right) \right\} \text{ (VIII, 341).}$
- 10) $\int \frac{2p^2x^2 - b^2 - p^2}{\sqrt{(b+p^2-p^2x^2)\{b^2-(b^2+p^2)x^2+p^2x^4\}}} dx = -\frac{1}{2}\pi \text{ [} b \geq 1 \text{] (VIII, 296*).}$

- 1) $\int \frac{(1-x^2)^{r-\frac{1}{2}} dx}{(\cos \lambda \pm x i \sin \lambda)^{2r}} = 2^{2r-1} \frac{\Gamma(r-\frac{1}{2})\Gamma(r+\frac{1}{2})}{\Gamma(2r)} e^{\pm 2\lambda i} \text{ (VIII, 316).}$
- 2) $\int \frac{(1+x)^{p-1}(1-x)^{q-1} dx}{\{(g-h)x+(g+h+2k)\}^{p+q}} = \frac{\Gamma(p)\Gamma(q)}{2\Gamma(p+q)} \frac{1}{(g+h)^p(h+k)^q} \text{ (IV, 75*).}$
- 3) $\int \frac{(1-x)^p(1+x)^q + (1-x)^q(1+x)^p}{(\cos \lambda \pm x i \sin \lambda)^{p+q}} \frac{dx}{1-x^2} = 2^{p+q} \frac{\Gamma(p)\Gamma(q)}{\Gamma(p+q)} e^{\pm(p-q)\lambda i} \text{ (VIII, 316*).}$
- 4) $\int \frac{(1-x)^p(1+x)^q - (1-x)^q(1+x)^p}{(\cos \lambda \pm x i \sin \lambda)^{p+q}} \frac{dx}{1-x^2} = 0 \text{ (VIII, 316*).}$
- 5) $\int \frac{dx}{\sqrt{q^2 - 2pqx + p^2}} = \frac{2}{p} [p > q], = \frac{2}{q} [p < q] \text{ (VIII, 290*).}$
- 6) $\int \frac{qx - p}{\sqrt{q^2 - 2pqx + p^2}} dx = -\frac{2}{p^2} [p > q], = 0 [p < q] \text{ (VIII, 290*).}$
- 7) $\int \frac{dx}{\sqrt{(1-2px+p^2)(1-2qx+q^2)}} = \frac{1}{\sqrt{pq}} \begin{cases} \frac{1+\sqrt{pq}}{1-\sqrt{pq}} \left[\frac{p^2}{q^2} < 1 \right], \\ \frac{1}{\sqrt{pq}} \begin{cases} \frac{\sqrt{p}+\sqrt{q}}{\sqrt{p}-\sqrt{q}} \\ \frac{\sqrt{q}+\sqrt{p}}{\sqrt{q}-\sqrt{p}} \end{cases} \left[\frac{p^2}{q^2} > 1 \right], \\ \frac{1}{\sqrt{pq}} \begin{cases} \frac{\sqrt{q}+\sqrt{p}}{\sqrt{q}-\sqrt{p}} [p^2 < 1 < q^2], \\ \frac{\sqrt{pq}+1}{\sqrt{pq}-1} \left[\frac{p^2}{q^2} > 1 \right] \end{cases} \end{cases} \text{ (VIII, 291).}$

- 1) $\int \frac{x^{p-1} dx}{1+qx} = \frac{\pi}{q^p} \operatorname{Cosec} p\pi \text{ (VIII, 238).}$ 2) $\int \frac{x^{1-p} dx}{1+x} = -\pi \operatorname{Cosec} p\pi \text{ V. T. 16, N. 1.}$
- 3) $\int \left(\frac{x^p - x^{-p}}{1-x} \right)^2 dx = 2(1-2p\pi \cot 2p\pi) \left[p^2 < \frac{1}{4} \right] \text{ (VIII, 324).}$

- 4) $\int \frac{x^p dx}{(1+qx)^2} = \frac{p\pi}{q^{p+1}} \operatorname{Cosec} p\pi$ V. T. 16, N. 1. 5) $\int \frac{x^p dx}{(1+x)^2} = \frac{1-p}{2} p\pi \operatorname{Cosec} p\pi$ V. T. 16, N. 7.
- 6) $\int \frac{dx}{(p+qx)^{a+\frac{1}{2}}} = \frac{2}{(2a-1)q^{a-\frac{1}{2}}} \text{ (VIII, 290).}$
- 7) $\int \frac{x^{p-1} dx}{(1+x)^{p+q}} = \frac{\Gamma(p)\Gamma(q)}{\Gamma(p+q)} = B(p, q) =$ 8) $\int \frac{x^{q-1} dx}{(1+x)^{p+q}} \text{ (VIII, 292).}$
- 9) $\int \frac{x^{p-1} dx}{(q+x)^{a+1}} = \frac{(-1)^a}{1^{a/2}} \frac{(p-1)^{a/2-1}}{\sin p\pi} \pi q^{p-a-1} \text{ (IV, 51).}$
- 10) $\int \frac{x^{p-1} dx}{(1+qx)^{p+r}} = \frac{\Gamma(p)\Gamma(r)}{q^p \Gamma(p+r)} \text{ (VIII, 631).}$
- 11) $\int \frac{x^{a+p} dx}{(1+x)^{2a+1}} = \frac{(-1)^a \pi p(p^2-1^2)(p^2-2^2)\dots(p^2-a^2)}{\sin p\pi \cdot 1^{2a+1/2}} [p < a+1] \text{ (VIII, 235).}$
- 12) $\int \frac{x^a dx}{(1+x)^{a+p+1}} = \Delta^a \left(\frac{1}{p}\right) \text{ (IV, 51).}$
- 13) $\int \left[x^{q-p} - \frac{x^q}{(1+x)^p} \right] dx = \frac{q}{q-p+1} \frac{\Gamma(q)\Gamma(p-q)}{\Gamma(p)} \text{ (VIII, 686).}$

- 1) $\int \frac{dx}{q^2-x^2} = 0 \text{ (VIII, 228).}$
- 2) $\int \frac{dx}{1+x^2} = \frac{2\pi}{9} \sqrt{3} =$ 3) $\int \frac{x dx}{1+x^2} \text{ (VIII, 292).}$
- 4) $\int \frac{dx}{q^2-x^2} = \frac{\pi}{2q^2 \sqrt{3}} \text{ (VIII, 229).}$
- 5) $\int \frac{dx}{1+x^4} = \frac{1}{4} \pi \sqrt{2} =$ 6) $\int \frac{x^2 dx}{1+x^4} \text{ (VIII, 292).}$
- 7) $\int \frac{dx}{1+x^6} = \frac{1}{3} \pi =$ 8) $\int \frac{x^4 dx}{1+x^6} \text{ (VIII, 292).}$
- 9) $\int \frac{dx}{(\pm p+qi)^2+x^2} = \frac{\pi}{2(p \pm qi)} \text{ (VIII, 194).}$
- 10) $\int \frac{x^{q-1} dx}{1+x^p} = \frac{\pi}{p} \operatorname{Cosec} \frac{q\pi}{p} = \frac{1}{p} \Gamma\left(\frac{q}{p}\right) \Gamma\left(\frac{p-q}{p}\right) [p \geq q \geq 0], = \infty [q > p] \text{ (VIII, 224).}$
- 11) $\int \frac{x^{q-1} dx}{1-x^p} = \frac{\pi}{p} \operatorname{Cot} \frac{q\pi}{p} [p > q] \text{ (VIII, 485).}$

$$12) \int \frac{1-x^q}{1-x^r} x^{p-1} dx = \frac{\pi \sin \frac{q\pi}{r}}{r \sin \frac{p\pi}{r} \cdot \sin \left\{ \frac{p+q}{r} \pi \right\}} \quad (\text{VIII}, 585).$$

$$13) \int \frac{dx}{(p+qx^2)^{a+1}} = \frac{1^{a/2}}{1^{a/2}} \frac{\pi}{2^{a+1} p^a \sqrt{pq}} \quad (\text{VIII}, 235).$$

$$14) \int \frac{dx}{(1+x^2)^3} = \frac{3}{16} \pi =$$

$$15) \int \frac{x^4 dx}{(1+x^2)^3} \quad (\text{VIII}, 226).$$

$$16) \int \frac{x^2 dx}{(1+x^2)^3} = \frac{1}{16} \pi \quad (\text{VIII}, 226).$$

$$17) \int \frac{dx}{(q^2-x^2)^2} = 0 \quad \text{V. T. 17, N. 1.}$$

$$18) \int \frac{x^{p+q-1} dx}{(1+x^q)^2} = \frac{p\pi}{q^2} \operatorname{Cosec} \frac{p\pi}{q} \quad [p < q] \quad \text{V. T. 17, N. 23.}$$

$$19) \int \frac{x^{p-1} dx}{(r^2+x^2)^q} = \frac{\Gamma(\frac{1}{2}p) \Gamma(q-\frac{1}{2}p)}{2\Gamma(q)} r^{p-2q} \quad [p < 1] \quad (\text{VIII}, 541).$$

$$20) \int \frac{x^{p-1} dx}{(1+x^q)^a} = \left(1-\frac{p}{q}\right) \left(1-\frac{p}{2q}\right) \dots \left(1-\frac{p}{(a-1)q}\right) \frac{\pi}{q} \operatorname{Cosec} \frac{p\pi}{q} \quad (\text{IV}, 55).$$

$$21) \int \frac{x^{2b} dx}{(p+qx^2)^{a+1}} = \frac{1^{b/2} 1^{a-b/2}}{1^{a/2}} \frac{\pi}{2^{a+1} q^b p^{a-b} \sqrt{pq}} \quad [a \geq b] \quad (\text{VIII}, 236).$$

$$22) \int \frac{x^{g-1} dx}{(p+qx^c)^{h+1}} = \frac{(c-g)^{h/c}}{1^{h/2}} \frac{1}{(cp)^h} \frac{1}{p} \left(\frac{p}{q}\right)^{\frac{g}{c}} \frac{\pi}{c \sin \frac{g\pi}{c}} \quad [g < c] \quad (\text{VIII}, 236).$$

$$23) \int \frac{x^{ac+g-1} dx}{(p+qx^c)^{b+1}} = \frac{g^{a/c} (c-g)^{b-a/c}}{1^{b/2}} \frac{1}{c^g p^{b-a+1} q^a} \left(\frac{p}{q}\right)^{\frac{g}{c}} \frac{\pi}{c \sin \frac{g\pi}{c}} \left[\begin{matrix} b+1 > a, \\ g < c \end{matrix} \right] \quad (\text{VIII}, 236).$$

$$1) \int \frac{dx}{(1+x)x^p} = \pi \operatorname{Cosec} p\pi \quad [p < 1] \quad (\text{VIII}, 486*).$$

$$2) \int \frac{dx}{(1-x)x^p} = -\pi \cot \pi p \quad [p < 1] \quad (\text{VIII}, 481).$$

$$3) \int \frac{dx}{(1+x^2)x^p} = \frac{1+p}{2} p\pi \operatorname{Cosec} p\pi \quad \text{V. T. 16, N. 7.}$$

$$4) \int \frac{x^p - a^{p-1} x^q}{x-a} \frac{dx}{x} = \pi a^{p-1} (\cot q\pi - \cot p\pi) \left[\begin{matrix} p < 1, \\ q < 1 \end{matrix} \right] \quad (\text{VIII}, 585*).$$

$$5) \int \frac{(1+x)^q - 1}{(1+x)^{p+q}} \frac{dx}{x} = Z'(p+q) - Z'(p) \quad (\text{IV}, 56).$$

$$6) \int \frac{x^q - 1}{x^p - x^{-p}} \frac{dx}{x} = \frac{\pi}{2p} \text{Tang} \frac{q\pi}{2p} \text{ (VIII, 585).}$$

$$7) \int \frac{x^{2q-1} - (p+x)^{2q-1}}{(p+x)^q x^q} dx = \pi \text{Cot} q\pi \text{ (VIII, 631).}$$

$$8) \int \frac{q(1-p) + (1-p-t+tq)x}{x^p (1+x)^{2-p-t} (x+q)^{t+1}} dx = 1 \text{ (VIII, 628).}$$

$$9) \int \frac{x^p - q^p}{x-1} \frac{x^{-p} - 1}{x-q} dx = \frac{1}{q-1} [2\pi(q^p - 1) \text{Cot} p\pi - (q^p + 1) lq] [p^2 < 1] \text{ (VIII, 324).}$$

$$10) \int \left[\frac{1}{x^p} - \frac{1}{(1+x)^p} \right] x^q dx = \frac{q}{q-p+1} \frac{\Gamma(q)\Gamma(p-q)}{\Gamma(p)} \text{ (VIII, 686).}$$

$$11) \int \left[\frac{1}{1+x} - \frac{1}{(1+x)^p} \right] \frac{dx}{x} = A + Z'(p) \text{ (VIII, 602).}$$

$$12) \int \left[\frac{1}{(1+x)^p} - \frac{1}{(1+x)^q} \right] \frac{dx}{x} = Z'(q) - Z'(p) \text{ V. T. 18, N. 11.}$$

$$13) \int \left[\frac{q^p x^{p-1}}{(1+qx)^p} - \frac{(1+qx)^{p-1}}{q^{p-1} x^p} \right] dx = \pi \text{Cot} p\pi \text{ (IV, 57).}$$

$$14) \int \left[\frac{1}{(s+px)^r} - \frac{1}{(s+qx)^r} \right] \frac{dx}{x} = \frac{1}{s^r} l \frac{q}{p} \text{ (VIII, 279).}$$

$$15) \int \left[\frac{1}{1+x^2} - \frac{1}{1+x} \right] \frac{dx}{x} = 0 \text{ (VIII, 702).}$$

$$1) \int \frac{x^p - 1}{x-1} \frac{dx}{x+r} = \frac{\pi}{1+r} \left(\frac{r^p - \text{Cosp}\pi}{\text{Sin} p\pi} - \frac{1}{\pi} l r \right) [p^2 < 1] \text{ (VIII, 323).}$$

$$2) \int \frac{x^p - x^q}{x-1} \frac{dx}{x+r} = \frac{\pi}{1+r} \left(\frac{r^p - \text{Cosp}\pi}{\text{Sin} p\pi} - \frac{r^q - \text{Cos} q\pi}{\text{Sin} q\pi} \right) \left[\frac{p^2}{q^2} \leq \frac{1}{1} \right] \text{ (VIII, 323).}$$

$$3) \int \frac{x^p - q^p}{x-q} \frac{x^p - 1}{x-1} dx = \frac{\pi}{q-1} \left(\frac{q^{2p} - 1}{\text{Sin} 2p\pi} - \frac{1}{\pi} q^p l q \right) [4p^2 < 1] \text{ (VIII, 324).}$$

$$4) \int \frac{x^p - x^{p-q}}{x-1} \frac{x^q - r^q}{x-r} dx = \frac{\pi}{r-1} \frac{\text{Sin} q\pi}{\text{Sin} p\pi} \left(\frac{r^{p+q} - 1}{\text{Sin}\{(p+q)\pi\}} + \frac{r^q - r^p}{\text{Sin}\{(p-q)\pi\}} \right) \left[\frac{(p+q)^2}{(p-q)^2} \leq \frac{1}{1} \right] \text{ (VIII, 324).}$$

$$5) \int \frac{x^{q-\frac{1}{2}} dx}{[(x+r)(x+s)]^q} = \frac{\Gamma(q-\frac{1}{2})\sqrt{\pi}}{\Gamma(q)} \frac{1}{(\sqrt{r}+\sqrt{s})^{2q-1}} \text{ Cayley, L. Sér. 2, T. 2, 47.}$$

$$6) \int \frac{dx}{(1+x)^{1-t} (x+q)^{1+t}} = \frac{1}{t(q-1)} \text{ (VIII, 628).}$$

$$7) \int \frac{(r-xi)^{-p} + (r+xi)^{-p}}{2} x^{2a} dx = 0 \quad [p > 2a+1] \text{ (IV, 57).}$$

$$8) \int \frac{(r-xi)^{-p} - (r+xi)^{-p}}{2} x^{2a-1} dx = 0 \quad [p > 2a] \text{ (IV, 58).}$$

$$9) \int \frac{(1+px)^{-r} + (1+qx)^{-r}}{2} x^{s-1} dx = (pq)^{\frac{1}{2}} \frac{\Gamma(s)\Gamma(r-s)}{\Gamma(r)} \cos \left\{ s \operatorname{Arccos} \left(\frac{p+q}{2\sqrt{pq}} \right) \right\} \\ 10) \int \frac{(1+px)^{-r} - (1+qx)^{-r}}{2} x^{s-1} dx = -(pq)^{\frac{1}{2}} \frac{\Gamma(s)\Gamma(r-s)}{\Gamma(r)} \sin \left\{ s \operatorname{Arccos} \left(\frac{p+q}{2\sqrt{pq}} \right) \right\} \quad [s < r] \text{ (IV, 58).}$$

$$11) \int \frac{(r-xi)^{-p} + (r+xi)^{-p}}{2} \frac{(s-xi)^{-q} + (s+xi)^{-q}}{2} dx = \frac{\pi}{2} (r+s)^{1-p-q} \frac{\Gamma(p+q-1)}{\Gamma(p)\Gamma(q)} \text{ (VIII, 679).}$$

$$12) \int \frac{(r-xi)^{-p} - (r+xi)^{-p}}{2} \frac{(s-xi)^{-q} - (s+xi)^{-q}}{2} dx = -\frac{\pi}{2} (r+s)^{1-p-q} \frac{\Gamma(p+q-1)}{\Gamma(p)\Gamma(q)} \text{ (VIII, 679).}$$

$$13) \int \left[\frac{x^p}{(1+x)^{1+q}} - \frac{x^p}{(1+x)^{1+p}} \right] dx = Z'(p+1) - Z'(q+1) \text{ V. T. 18, N. 12.}$$

$$14) \int \frac{x^{p-1}}{q^2+x^2} \frac{dx}{r^2-x^2} = \frac{\pi}{2} \frac{q^{p-1} + r^{p-1} \cos \frac{1}{2} p \pi}{q^2+r^2} \operatorname{Cosec} \frac{1}{2} p \pi \text{ (IV, 59).}$$

$$15) \int \frac{x^p}{1+x^{2q}} \frac{dx}{1+x^{2q}} = \frac{\pi}{4q} \left[\operatorname{Cosec} \left(\frac{p+1}{2q} \pi \right) + \operatorname{Sec} \left(\frac{p+1}{2q} \pi \right) \right] + \\ + \frac{\pi}{6q} \frac{1 + 4 \cos \left(\frac{p+1}{3q} 2\pi \right) + 4 \cos \left(\frac{p+1}{3q} 2\pi - \frac{4\pi}{3} \right)}{\sin \left(\frac{p+1}{q} \pi \right)} \text{ (IV, 59).}$$

$$16) \int \frac{x^{p-1}}{1+x^a} \frac{dx}{1+x^b} = \frac{\pi}{2a \sin p \pi} \sum_0^{a-1} \frac{\cos \left(\frac{2n-a+1}{a} p \pi \right) + \cos \left(\frac{(2n-a+1)(p-b)}{a} \pi \right)}{1 + \cos \left((2n+1) \frac{b\pi}{a} \right)} + \\ + \frac{\pi}{2b \sin p \pi} \sum_0^{b-1} \frac{\cos \left(\frac{2n-b+1}{b} p \pi \right) + \cos \left(\frac{(2n-b+1)(p-a)}{b} \pi \right)}{1 + \cos \left((2n+1) \frac{a\pi}{b} \right)} \text{ (IV, 59).}$$

$$17) \int \left(\frac{x^p}{1+x^{2p}} \right)^q \frac{dx}{1-x^2} = 0 \text{ (VIII, 278).}$$

$$18) \int \frac{(r-xi)^{-q} + (r+xi)^{-q}}{s^2+x^2} dx = \frac{\pi}{s(r+s)^q} \text{ (VIII, 679).}$$

$$19) \int \frac{(r-xi)^{-q} - (r+xi)^{-q}}{i(s^2+x^2)} x dx = \frac{\pi}{(r+s)^q} \text{ (VIII, 679).}$$

$$1) \int \frac{x^{1-p} dx}{r^2 + (x+q)^2} = \frac{\pi}{\sqrt{q^2 + r^2}^p} \frac{\sin \left\{ (1-p) \operatorname{Arctg} \frac{r}{q} \right\}}{\sin p\pi \cdot \sin \left(\operatorname{Arctg} \frac{r}{q} \right)} \quad (\text{VIII, 532*}).$$

$$2) \int \frac{x+q}{r^2 + (x+q)^2} x^{p-1} dx = \frac{\pi}{\sqrt{q^2 + r^2}^{1-p}} \operatorname{Cosec} p\pi \cdot \cos \left\{ (p-1) \operatorname{Arctg} \frac{r}{q} \right\} \quad (\text{VIII, 532}).$$

$$3) \int \frac{x^p dx}{q^2 + 2qx \cos \lambda + x^2} = \frac{\pi q^{p-1}}{\sin p\pi} \frac{\sin p\lambda}{\sin \lambda} \left[\begin{matrix} p^2 \leq 1 \\ \lambda^2 \leq \pi^2 \end{matrix} \right] \quad (\text{VIII, 474*}).$$

$$4) \int \frac{dx}{\left[\left(gx + \frac{h}{x} \right)^2 + q \right]^{p+1}} = \frac{2\Gamma(p+\frac{1}{2})\sqrt{\pi}}{g q^{p+\frac{1}{2}} \Gamma(p+1)} \quad \left. \begin{matrix} \\ \\ \end{matrix} \right\} \text{Liouville, L. Sér. 2, T. 1, 421.}$$

$$5) \int \frac{g + \frac{h}{x^2}}{\left[\left(gx + \frac{h}{x} \right)^2 + q \right]^{p+1}} dx = \frac{\Gamma(p+\frac{1}{2})\sqrt{\pi}}{q^{p+\frac{1}{2}} \Gamma(p+1)}$$

$$6) \int \frac{dx}{(p^2 + q^2)^2 + 2(p^2 - q^2)x^2 + x^4} = \frac{1}{4p} \frac{\pi}{p^2 + q^2} \quad (\text{VIII, 194}).$$

$$7) \int \frac{x^2 dx}{(p^2 + q^2)^2 + 2(p^2 - q^2)x^2 + x^4} = \frac{\pi}{4p} \quad (\text{VIII, 194}).$$

$$8) \int \frac{x^{p+1} dx}{(q^2 + 2qx \cos \lambda + x^2)^2} = \frac{\pi}{2q^{p-1} \sin p\pi} \frac{p \sin \lambda \cdot \cos p\lambda - \cos \lambda \cdot \sin p\lambda}{\sin^2 \lambda} \quad \text{V. T. 20, N. 3.}$$

$$9) \int \frac{x^{q-1} dx}{[(p+r-1)x^2 + (2p+r)x + p]^q} = \frac{\Gamma(q-\frac{1}{2})}{[2p+r+2\sqrt{p(p+r-1)}]^{q-\frac{1}{2}} \Gamma(q)} \sqrt{\frac{\pi}{p+r-1}} \quad \text{Cayley, L. Sér. 2, T. 2, 47.}$$

$$10) \int \frac{dx}{x^6 + px^4 + qx^2 + r} = \frac{a\pi}{a(a^2-p)\sqrt{r-2r}}$$

$$11) \int \frac{x^2 dx}{x^6 + px^4 + qx^2 + r} = \frac{\pi\sqrt{r}}{a(a^2-p)\sqrt{r-2r}}$$

$$12) \int \frac{x^4 dx}{x^6 + px^4 + qx^2 + r} = \frac{1}{2} \pi \sqrt{r} \frac{a^2-p}{a(a^2-p)\sqrt{r-2r}}$$

où a est la plus grande racine de l'équation
 $(Z^2-p)^2 - 8Z\sqrt{r-4q} = 0$ (VIII, 226).

$$13) \int \frac{x^{p-1} dx}{1+x+x^2+\dots+x^{a-1}} = \frac{\pi \sin \frac{\pi}{a}}{a \sin \frac{p\pi}{a} \cdot \sin \left(\frac{p+1}{a} \pi \right)} [p < a] \quad (\text{VIII, 320}).$$

$$4) \int \frac{x^{p-1} dx}{1-x+x^2-\dots-x^{2a-1}} = \frac{\pi \sin \left(\frac{2p+1}{2a} \pi \right)}{2a \sin \frac{p\pi}{2a} \cdot \sin \left(\frac{p+1}{2a} \pi \right)} [p < 2a] \quad (\text{VIII, 320}).$$

- 15) $\int \frac{x^{2a-1} dx}{1-x+x^2-\dots+x^{2a}} = \frac{\pi \sin\left(\frac{2p+1}{2a+1} \frac{\pi}{2}\right) \cdot \cos\left(\frac{1}{2} \frac{\pi}{2a+1}\right)}{(2a+1) \sin\left(\frac{p\pi}{2a+1}\right) \cdot \sin\left(\frac{p+1}{2a+1} \pi\right)} [p < 2a+1] \text{ (VIII, 320).}$
- 16) $\int \frac{1}{1+2x \cos \lambda + x^2} \frac{dx}{x^p} = \frac{\pi \sin p \lambda}{\sin p \pi \cdot \sin \lambda} \left[\frac{p^2}{\lambda^2} \leq \frac{1}{\pi^2} \right] \text{ (VIII, 474).}$
- 17) $\int \frac{1}{r^2 + (x+q)^2} \frac{dx}{x^p} = \frac{\pi}{r \sqrt{q^2 + r^2}} \operatorname{Cosec} p \pi \cdot \sin\left(p \operatorname{Arctg} \frac{r}{q}\right) \text{ (VIII, 532*)}. \quad \frac{dx}{x^p}$
- 18) $\int \frac{x+q}{r^2 + (x+q)^2} \frac{dx}{x^p} = \frac{\pi}{\sqrt{q^2 + r^2}} \operatorname{Cosec} p \pi \cdot \cos\left(p \operatorname{Arctg} \frac{r}{q}\right) \text{ (VIII, 532*)}. \quad \frac{dx}{x^p}$
- 19) $\int \frac{1}{\left[\left(gx + \frac{h}{x}\right)^2 + q\right]^{p+1}} \frac{dx}{x^2} = \frac{\Gamma(p+\frac{1}{2}) \sqrt{\pi}}{2 h q^{p+\frac{1}{2}} \Gamma(p+1)} \text{ Liouville, L. Sér. 2, T. 1, 421.}$

- 1) $\int \frac{x^{p-\frac{1}{2}} dx}{(1+x)^2} = \frac{1-2p}{2} \pi \operatorname{Sec} p \pi \text{ V. T. 16, N. 7.}$
- 2) $\int \frac{x^a dx}{(p+qx)^{b+\frac{1}{2}}} = \frac{1^{a/1}}{(2b-1)^{a+1/2}} \frac{2^{a+1}}{q^{a+1} p^{b-a-\frac{1}{2}}} [a < b - \frac{1}{2}] \text{ (VIII, 237).}$
- 3) $\int \frac{dx}{\sqrt{1+x^4}} = F'\left(\sin \frac{\pi}{4}\right) \text{ (IV, 63).}$
- 4) $\int \frac{1-x}{\sqrt{1-x^4}} dx = 0 \text{ (IV, 63).}$
- 5) $\int \frac{dx}{1-x^4} \sqrt{1+x^4} = 0 \text{ (VIII, 295).}$
- 6) $\int \frac{dx}{\sqrt{1+x^4}} = \frac{2}{3} \sqrt{3} \cdot F'\left(\sin \frac{\pi}{12}\right) \text{ (IV, 64).}$
- 7) $\int \frac{dx}{\sqrt{1+x^8}} = \operatorname{Sec} \frac{\pi}{8} \cdot \sqrt{\frac{1}{2}} \cdot F'\left(\operatorname{Tg} \frac{\pi}{8}\right) \text{ (IV, 64).}$
- 8) $\int \frac{dx}{\sqrt{1+x^{12}}} = \frac{1}{2\sqrt{3}} \operatorname{Sec} \frac{\pi}{12} \cdot F'\left(\sin \frac{\pi}{4}\right) + \operatorname{Tang} \frac{\pi}{12} \cdot F'\left(\frac{\sqrt{2-\sqrt{3}}}{1+\sqrt{3}}\right) \text{ (IV, 64).}$
- 9) $\int \frac{x^{2p-1} dx}{\sqrt{1+x^q}} = 2^{\frac{2p}{q}} B(q-2p, p) [q > 2p] \text{ (IV, 64).}$
- 10) $\int \frac{dx}{(1+x)^2 x^{p+\frac{1}{2}}} = \frac{2p+1}{2} \pi \operatorname{Sec} p \pi \text{ V. T. 16, N. 4.}$
- 11) $\int \left(\frac{x^{\frac{1}{2}p} - x^{-\frac{1}{2}p}}{x-1}\right)^2 dx = 2(1-p\pi \operatorname{Cot} p\pi) [p^2 < 1] \text{ (VIII, 324).}$
- 12) $\int \left[1 - \frac{1+x^2}{\sqrt{1+x^4}}\right] \frac{dx}{x} = -12 \text{ V. T. 21, N. 27.}$

$$13) \int \frac{dx}{(q^2 + x^2) \sqrt{p^2 + x^2}} = \frac{1}{q \sqrt{p^2 - q^2}} \operatorname{Arctg} \left(\frac{\sqrt{p^2 - q^2}}{q} \right) [q < p], = \frac{1}{q \sqrt{q^2 - p^2}} \frac{q + \sqrt{q^2 - p^2}}{p} [q > p] \text{ (VIII, 200).}$$

$$14) \int \frac{dx}{(1 + px^2) \sqrt{1 + 9px^2}} = \frac{\pi}{4\sqrt{p}} \text{ (VIII, 294).}$$

$$15) \int \frac{\left(x - \frac{1}{x}\right)^{2q} (1 + x^2)}{\left(x^2 + \frac{1}{x^2}\right)^{p+\frac{1}{2}}} \frac{dx}{x^2} = 2^{q-p} \cos^2 q\pi \frac{\Gamma(q + \frac{1}{2}) \Gamma(p - q)}{\Gamma(p + \frac{1}{2})} \text{ (VIII, 293).}$$

$$16) \int \frac{dx}{\sqrt{(1 + p^2 x)(1 + q^2 x)(1 + r^2 x)}} = \frac{2}{\sqrt{p^2 - r^2}} F \left[\operatorname{Arccos} \frac{r}{p}, \sqrt{\frac{p^2 - q^2}{p^2 - r^2}} \right] \text{ (IV, 65).}$$

$$17) \int \frac{dx}{\sqrt{(p^2 + l^2 x)(q^2 + m^2 x)(r^2 + n^2 x)}} = \frac{2}{m \sqrt{p^2 n^2 - r^2 l^2}} F \left[\operatorname{Arccos} \frac{rl}{pn}, \frac{n}{m} \sqrt{\frac{p^2 m^2 - q^2 l^2}{p^2 n^2 - r^2 l^2}} \right] \text{ (IV, 65).}$$

$$18) \int \frac{dx}{\sqrt{x(x + p^2)(x + q^2)(x + r^2)}} = \frac{2}{\sqrt{p^2 - r^2}} F \left[\operatorname{Arccos} \frac{r}{p}, \sqrt{\frac{p^2 - q^2}{p^2 - r^2}} \right] \text{ (IV, 65).}$$

$$19) \int \frac{x^{a+\frac{1}{2}} dx}{(p + qx + rx^2)^{a+1}} = \frac{1}{(q + 2\sqrt{pr})^{a+\frac{1}{2}}} \frac{\Gamma(a + \frac{1}{2})}{\Gamma(a + 1)} \sqrt{\frac{\pi}{r}} \left. \begin{array}{l} \\ \end{array} \right\} \text{Boole, Phil. Trans. 1857.}$$

$$20) \int \frac{x^{a-\frac{1}{2}} dx}{(p + qx + rx^2)^{a+1}} = \frac{1}{(q + 2\sqrt{pr})^{a+\frac{1}{2}}} \frac{\Gamma(a + \frac{1}{2})}{\Gamma(a + 1)} \sqrt{\frac{\pi}{r}}$$

$$21) \int \frac{x^{p-t} dx}{(q + rx + sx^2)^{p+\frac{1}{2}}} = \frac{1}{\Gamma(p + \frac{1}{2})} \left(\frac{s}{q}\right)^{\frac{1}{2}t} \sqrt{\frac{\pi}{s}} \cdot \sum_{n=0}^{\infty} \frac{(t-n)^{2n/2}}{2^{n/2} (2\sqrt{qs})^n} \frac{\Gamma(p-n)}{(r + 2\sqrt{qs})^{p-n}} \text{ (VIII, 434).}$$

$$22) \int \frac{x^{p+t} dx}{(q + rx + sx^2)^{p+\frac{1}{2}}} = \frac{1}{\Gamma(p + \frac{1}{2})} \left(\frac{q}{s}\right)^{\frac{1}{2}t} \sqrt{\frac{\pi}{s}} \cdot \sum_{n=0}^{\infty} \frac{(t-n+1)^{2n/2}}{2^{n/2} (2\sqrt{qs})^n} \frac{\Gamma(p-n)}{(r + 2\sqrt{qs})^{p-n}} \text{ (VIII, 434).}$$

$$23) \int \frac{dx}{\sqrt{3 + 3x^2 + x^4}} = \frac{1}{\sqrt{3}} F \left(\sin \frac{\pi}{12} \right) \text{ (VIII, 303).}$$

$$24) \int \frac{1}{\sqrt{3 + 3x^2 + x^4}} \frac{dx}{(1 + x^2)^2} = \sqrt{3} \cdot E \left(\sin \frac{\pi}{12} \right) - \frac{1 + \sqrt{3}}{2\sqrt{3}} F \left(\sin \frac{\pi}{12} \right) \text{ (VIII, 303).}$$

$$25) \int \frac{dx}{\sqrt{(1 + x^2)(1 + x^2 - p^2 x^2)}} = F(p) \text{ (VIII, 340).}$$

$$26) \int \frac{x^2 dx}{\sqrt{(1 + x^2)(1 + x^2 - p^2 x^2)}} = \infty \text{ (VIII, 341).}$$

$$27) \int \left[1 - \frac{qx^2 + p}{\sqrt{q^2 x^4 + 2(pq - 2r^2)x^2 + p^2}} \right] \frac{dx}{x} = 2 \frac{pq - r^2}{pq} \quad (\text{VIII, 296}).$$

$$28) \int \frac{p\sqrt{2} + \sqrt{x}}{x + p\sqrt{2x} + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2\sqrt{q} \cdot (q + p\sqrt{2q} + p^2)} \quad (\text{IV, 66}).$$

$$29) \int \frac{q + \sqrt{2x}}{q^2 + q\sqrt{2x} + x} \frac{dx}{1 + r^2 x^2} = \frac{\pi}{2r} \frac{1}{1 + q\sqrt{r}} \quad (\text{IV, 66}).$$

$$30) \int \frac{q + \sqrt{2x}}{q^2 + q\sqrt{2x} + x} \frac{dx \sqrt{x}}{1 + r^2 x^2} = \frac{\pi}{\sqrt{r}} \frac{\sqrt{2}}{1 + q\sqrt{r}} \quad (\text{IV, 66}).$$

$$31) \int \frac{x^6}{\sqrt{1 + (2 - 4p^2)x^2 + x^4}} \frac{dx}{(1 + x^2)^3} = \frac{3}{8p^2} \{E'(p) - F'(p)\} + \frac{1}{2} F'(p) \quad [p < 1] \quad (\text{VIII, 433}).$$

$$32) \int \frac{x^6 dx \sqrt{1 + (2 - 4p^2)x^2 + x^4}}{(1 + x^2)^3} = \frac{2p^2 + 1}{8p^2} E'(p) - \frac{1 - p^2}{8p^2} F'(p) \quad [p < 1] \quad (\text{VIII, 433}).$$

$$1) \int \frac{dx}{x \pm q} = 0 \quad (\text{VIII, 232}).$$

$$2) \int \frac{x dx}{x^2 + p^2} = 0 \quad (\text{VIII, 199}).$$

$$3) \int \frac{(-xi)^{p-1}}{1 + x^2} dx = \pi \quad (\text{IV, 66}).$$

$$4) \int \frac{(-xi)^{p-1}}{1 - x^2} dx = \pi \cos \frac{1}{2} p \pi \quad (\text{IV, 66}).$$

$$5) \int \frac{dx}{(r + xi)^p (s - xi)^q} = 2\pi (r + s)^{1-p-q} \frac{\Gamma(p+q-1)}{\Gamma(p)\Gamma(q)} \quad (\text{VIII, 673}).$$

$$6) \int \frac{dx}{(r + xi)^p (s + xi)^q} = 0 \quad (\text{VIII, 679}).$$

$$7) \int \frac{dx}{(r - xi)^p (s - xi)^q} = 0 \quad (\text{VIII, 673}).$$

$$8) \int \left(\frac{1}{x - r - si} + \frac{1}{x - r + si} \right) dx = 0 \quad \text{V. T. 22, N. 9.}$$

$$9) \int \left(\frac{p - qi}{x - r - si} + \frac{p + qi}{x - r + si} \right) dx = 2\pi q \quad (\text{IV, 67}).$$

$$10) \int [(r - xi)^{-a} \pm (r + xi)^{-a}] [(s - xi)^{-b} \pm (s + xi)^{-b}] dx = \pm \frac{2\pi}{(r + s)^{a+b-1}} \frac{\Gamma(a+b-1)}{\Gamma(a)\Gamma(b)} \quad (\text{VIII, 679}).$$

$$11) \int \frac{1}{(r - qxi)^p} \frac{dx}{1 + x^2} = \frac{\pi}{(q + r)^p} \quad (\text{VIII, 444}).$$

$$12) \int \frac{dx}{(x - q)^2 + p^2} = \frac{1}{p} \pi \quad (\text{VIII, 200}).$$

F. Alg. fract.	TABLE 22, suite.	Lim. — ∞ et ∞ .
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$$13) \int \frac{x-q}{(x-q)^2 + p^2} dx = 0 \text{ (VIII, 200).}$$

$$14) \int \frac{p+qx}{r^2 + 2rx \cos \lambda + x^2} dx = \frac{\pi}{r \sin \lambda} (p - qr \cos \lambda) \text{ (IV, 68).}$$

$$15) \int \frac{x}{1+(p+qx)^2} \frac{dx}{1+x^2} = \frac{(1-q)^2 + p^2}{(1+p^2-q^2)^2 + 4p^2q^2} p\pi \text{ (VIII, 355).}$$

F. Alg. fract.	TABLE 23.	Lim. 1 et ∞ .
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$$1) \int \frac{(x-1)^{1-p} dx}{x^2} = \frac{1-p}{2} p\pi \operatorname{Cosec} p\pi \text{ V. T. 1, N. 4. } 2) \int \frac{dx}{x(x-1)^p} = \pi \operatorname{Cosec} p\pi \text{ V. T. 3, N. 5.}$$

$$3) \int \frac{dx}{x^2(x-1)^p} = \frac{1+p}{2} p\pi \operatorname{Cosec} p\pi \text{ V. T. 3, N. 6. } 4) \int \frac{dx}{x^2-p^2} = \infty \text{ (VIII, 232*)}$$

$$5) \int \frac{dx}{(r-qx)(x-1)^p} = -\pi \operatorname{Cosec} p\pi \cdot \left(\frac{q}{q-r}\right)^p [r < q] \text{ (VIII, 541*)}$$

$$6) \int \frac{1}{1+qx^2} \frac{dx}{x} = \frac{1}{2} i \frac{1+q}{q} \text{ (VIII, 367). } 7) \int (x-1)^{p-\frac{1}{2}} \frac{dx}{x} = \pi \operatorname{Sec} p\pi \text{ V. T. 8, N. 12.}$$

$$8) \int (x-1)^{p-\frac{1}{2}} \frac{dx}{x^2} = \frac{1-2p}{2} \pi \operatorname{Sec} p\pi \text{ V. T. 8, N. 11.}$$

$$9) \int \frac{\left(1+\frac{1}{x^2}\right) \left(x-\frac{1}{x}\right)^{2q}}{\left(x^2+\frac{1}{x^2}\right)^{p+\frac{1}{2}}} dx = 2^{q-p-1} \frac{\Gamma(q+\frac{1}{2})\Gamma(p-q)}{\Gamma(p+\frac{1}{2})} \text{ (VIII, 293).}$$

$$10) \int \frac{dx}{x(x-1)^{p-\frac{1}{2}}} = \pi \operatorname{Sec} p\pi \text{ V. T. 8, N. 12. } 11) \int \frac{dx}{x^2(x-1)^{p-\frac{1}{2}}} = \frac{2p-1}{2} \pi \operatorname{Sec} p\pi \text{ V. T. 8, N. 11.}$$

F. Alg. fract.	TABLE 24.	Lim. diverses.
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$$1) \int_q^p \frac{dx}{\sqrt{(x^2-q^2)(p^2-x^2)}} = \frac{1}{p} F\left\{\frac{1}{p} \sqrt{p^2-q^2}\right\} \text{ (VIII, 299).}$$

$$2) \int_q^p \frac{x dx}{\sqrt{(x^2-q^2)(p^2-x^2)}} = \frac{1}{2} \pi \text{ (VIII, 311).}$$

$$3) \int_q^p \frac{x^2 dx}{\sqrt{(x^2-q^2)(p^2-x^2)}} = p E\left\{\frac{1}{p} \sqrt{p^2-q^2}\right\} \text{ (VIII, 299).}$$

$$4) \int_q^p \frac{x^4 dx}{\sqrt{(x^2-q^2)(p^2-x^2)}} = 2p \frac{p^2+q^2}{3} E\left\{\frac{1}{p} \sqrt{p^2-q^2}\right\} - \frac{1}{3} p q^2 F\left\{\frac{1}{p} \sqrt{p^2-q^2}\right\} \text{ (VIII, 299).}$$

F. Alg. fract.	TABLE 24, suite.	Lim. diverses.
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- 5) $\int_1^p \frac{dx}{x \sqrt{(x^2 - q^2)(p^2 - x^2)}} = \frac{\pi}{2pq}$ (VIII, 312).
- 6) $\int_1^p \frac{dx}{x^2 \sqrt{(x^2 - q^2)(p^2 - x^2)}} = \frac{\pi}{4} \frac{p^2 + q^2}{p^2 q^2}$ (VIII, 312).
- 7) $\int_1^p \frac{(x-q)^{r-1} (p-x)^{s-1}}{(x+s)^{r+s}} dx = \frac{(p-q)^{r+s-1}}{(p+s)^r (q+s)^s} \frac{\Gamma(r)\Gamma(s)}{\Gamma(r+s)}$ Winckler, Sitz. Ber. Wien. B. 20, 97.
- 8) $\int_1^{1-q} \frac{(x-q)^{p-1} dx}{r-x} = \pm \frac{(-1)^p \pi}{(r-q)^{1-p}} \operatorname{Cosec} p\pi$ (\pm selon que $q > p$ ou $q < p$) Jürgensen, (VIII, 541).
- 9) $\int_1^{\operatorname{Cosec} \lambda} \frac{dx}{\sqrt{(x-1)(1-x^2 \sin^2 \lambda)}} = \sqrt{\frac{2}{\sin \lambda}} \cdot F\left(\sin \frac{\pi - 2\lambda}{4}\right)$ (VIII, 304).
- 10) $\int_{-\infty}^1 \frac{dx}{(r-qs)(x-1)^p} = -\pi \operatorname{Cosec} p\pi \cdot \left(\frac{q}{q-r}\right)^p$ [$r > q$] (VIII, 541*).

F. Algébrique. — Intégr. Limites.	TABLE 25.	Lim. diverses.
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- 1) $\int_0^1 \frac{1-x^k}{1-x} dx = A + k$ (VIII, 381).
 - 2) $\int_0^1 \frac{x^{p^k} - x^{q^k}}{1-x} dx = k \frac{q}{p}$ (VIII, 381).
 - 3) $\int_0^1 \left[\frac{kx^{k-1}}{1-x^k} - \frac{x^k}{1-x} \right] dx = A$ (IV, 36).
 - 4) $\int_0^1 \left[\frac{k}{1-x} - \frac{\sqrt[k]{x}}{1-\sqrt[k]{x}} \right] dx = kA$ (IV, 49).
 - 5) $\int_0^a \frac{kx^p dx}{k^2 + (x+r)^2} = 0$ (VIII, 384).
 - 6) $\int_0^a \frac{kx^p dx}{k^2 + (x-r)^2} = \pi r^p$ [$a > r$], $= 0$ [$a < r$] (VIII, 384).
 - 7) $\int_0^a \frac{k dx}{k^2 + x^2} = \frac{1}{2} \pi$ (VIII, 382).
 - 8) $\int_{-\infty}^a \frac{k dx}{k^2 + x^2} = \pi$ [$a > 0$], $= 0$ [$a < 0$] (VIII, 382).
- [Lim. $k = \infty$].
- [Lim. $k = 0$].

F. Expon. Forme entière.	TABLE 26.	Lim. 0 et ∞ .
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- 1) $\int e^{(p+qi)x} dx = \frac{p-qi}{p^2+q^2}$ (VIII, 201).
- 2) $\int e^{-p^2 x^2} dx = \frac{1}{2p} \sqrt{\pi}$ (VIII, 263).

$$3) \int e^{px^2} dx = \frac{1}{2} e^{\frac{1}{2}\pi i} \sqrt{\frac{\pi}{p}} \text{ V. T. 26, N. 10.}$$

$$4) \int e^{-x^p} dx = \frac{1}{p} \Gamma\left(\frac{1}{p}\right) \text{ V. T. 26, N. 11.}$$

$$5) \int e^{-p e^{bx}} dx = \frac{1}{b} \text{Ei}(-p) \text{ (IV, 76).}$$

$$6) \int e^{-x^{\frac{2}{1+2a}}} dx = \frac{1^{a+1/2}}{2^{a+1}} \sqrt{\pi} \text{ V. T. 26, N. 4.}$$

$$7) \int e^{-\frac{1}{x^2}} dx = \sqrt{\pi} \text{ V. T. 26, N. 10.}$$

$$8) \int e^{-\frac{1}{x^q}} dx = \frac{\sqrt[q]{q}}{(q-1)^{\frac{1}{q}+1}} \text{ (IV, 76).}$$

$$9) \int e^{-(x^2+qx)} dx = \frac{1}{2} e^{\frac{q^2}{4p}} \sqrt{\frac{\pi}{p}} - \frac{q}{2p} \sum_{n=0}^{\infty} \frac{1}{2n+1} \frac{1}{1^{n/2}} \left(\frac{q^2}{2p}\right)^n \text{ Raabe, Cr. B. 48, 178.}$$

$$10) \int e^{-p^2 x^2 - \frac{q^2}{x^2}} dx = \frac{1}{2p} e^{-\frac{q^2}{4p}} \sqrt{\pi} \text{ (VIII, 427).}$$

$$11) \int e^{-(x-\frac{p}{x})^2} dx = \frac{1}{2b} \Gamma\left(\frac{1}{2b}\right) \text{ (IV, 77).}$$

$$12) \int e^{\left(\frac{x^2}{p^2} + \frac{q^2}{x^2}\right)^{r/2}} dx = \frac{1}{2} p e^{\frac{2qr}{p} + \frac{\pi i}{4}} \sqrt{\frac{\pi}{r}} \text{ (IV, 77).}$$

$$13) \int (e^x - 1)^q e^{-px} dx = \frac{\Gamma(q+1)\Gamma(p)}{\Gamma(p+q+1)} \text{ (IV, 77).}$$

$$14) \int (e^{px} + e^{-px}) e^{-q^2 x^2} dx = \frac{1}{q} e^{\frac{p^2}{q}} \sqrt{\pi} \text{ (VIII, 570).}$$

$$15) \int (e^{px} - e^{-px}) e^{-r^2 x^2} dx = \frac{p}{r^2} e^{\frac{p^2}{r^2}} \sqrt{\pi} \text{ (VIII, 570).}$$

$$1) \int \frac{dx}{1+e^{px}} = \frac{1}{p} \ln 2 \text{ (IV, 78).}$$

$$2) \int \frac{dx}{e^{px} + e^{-px}} = \frac{\pi}{4p} \text{ (VIII, 297),}$$

$$3) \int \frac{e^{px} - e^{-px}}{1+e^{qx}} dx = \frac{\pi}{q} \text{Cosec} \frac{p\pi}{q} - \frac{1}{p} \text{ (VIII, 557*)}.$$

$$4) \int \frac{e^{px} + e^{-px}}{e^{qx} + e^{-qx}} dx = \frac{\pi}{2q} \text{Sec} \frac{p\pi}{2q} [q > p] \text{ (VIII, 488*)}.$$

$$5) \int \frac{(e^{px} + e^{-px})(e^{qx} + e^{-qx})}{e^{rx} + e^{-rx}} dx = \frac{2\pi}{r} \frac{\cos \frac{p\pi}{2r} \cdot \cos \frac{q\pi}{2r}}{\cos \frac{p\pi}{r} + \cos \frac{q\pi}{r}} \text{ (VIII, 533*)}.$$

$$6) \int \frac{(e^{px} - e^{-px})(e^{qx} - e^{-qx})}{e^{rx} + e^{-rx}} dx = \frac{2\pi}{r} \frac{\sin \frac{p\pi}{2r} \cdot \sin \frac{q\pi}{2r}}{\cos \frac{p\pi}{r} + \cos \frac{q\pi}{r}} \text{ (VIII, 533*)}.$$

$$\left. \begin{array}{l} 5) \\ 6) \end{array} \right\} [p < r < q].$$

$$7) \int \frac{e^{-qx} dx}{1 - pe^{-rx}} = \sum_0^{\infty} \frac{p^n}{q + nr} \text{ Poisson, P. 20, 222.}$$

$$8) \int \frac{e^{-qx} - e^{-px}}{1 - e^{-x}} dx = Z'(p) - Z'(q) \text{ V. T. 4, N. 5.}$$

$$9) \int \frac{e^{px} - e^{-px}}{e^{qx} - 1} dx = \frac{1}{p} - \frac{\pi}{q} \operatorname{Cot} \frac{p\pi}{q} \text{ (VIII, 557*)}. \quad [q > p]$$

$$10) \int \frac{e^{px} - e^{-px}}{e^{qx} - e^{-qx}} dx = \frac{\pi}{2q} \operatorname{Tang} \frac{p\pi}{2q} \text{ (VIII, 488*)}. \quad [q > p]$$

$$11) \int \frac{(e^{px} - e^{-px})(e^{qx} + e^{-qx})}{e^{rx} - e^{-rx}} dx = \frac{\pi}{r} \frac{\sin \frac{p\pi}{r}}{\cos \frac{p\pi}{r} + \cos \frac{q\pi}{r}} \text{ (VIII, 533*)}. \quad [p < r]$$

$$12) \int \left[\frac{qe^{-raqx}}{1 - e^{-qx}} - \frac{pe^{-rapx}}{1 - e^{-px}} \right] dx = e^{-r} l \frac{p}{q} \text{ Winckler, Sitz. Ber. Wien. B. 21, 389.}$$

$$13) \int \frac{dx}{e^{x^2} + e^{-x^2}} = \frac{1}{2} \sum_0^{\infty} (-1)^n \sqrt{\frac{\pi}{2n+1}} \text{ (VIII, 487).}$$

$$14) \int \frac{e^{px} dx}{(e^{2px} + 1)^2} = \frac{\pi - 2}{8p} \text{ V. T. 27, N. 2.}$$

$$15) \int \frac{e^{2px}}{(e^{px} + 1)^2} dx = \frac{1}{2p} (1 - 2l2) \text{ V. T. 27, N. 1.}$$

$$16) \int \frac{(e^{px} - e^{-px})(e^{qx} - e^{-qx})}{(e^{qx} + e^{-qx})^2} dx = \frac{p\pi}{2q^2} \operatorname{Sec} \frac{p\pi}{2q} \text{ (VIII, 487*)}. \quad [q > p]$$

$$17) \int \frac{dx}{(e^{px} + e^{-px})^q} = \frac{\sqrt{\pi}}{2^{2q+1} p} \frac{\Gamma(q)}{\Gamma(q + \frac{1}{2})} \text{ (VIII, 422*)}. \quad [q > \frac{1}{2}]$$

$$18) \int \frac{e^{2px} + e^{-2px}}{(e^x + e^{-x})^{2q}} dx = \frac{\Gamma(q+p)\Gamma(q-p)}{2\Gamma(2q)} \text{ V. T. 4, N. 17.}$$

$$19) \int \frac{e^{(q-1)px} dx}{(e^{px} + e^{-px})^{q+1}} = \frac{-1}{pq2^{q+1}} + \frac{\sqrt{\pi}}{2^{2q+2} p} \frac{\Gamma(q)}{\Gamma(q + \frac{1}{2})} \text{ V. T. 27, N. 17.}$$

$$20) \int \frac{dx}{(e^{p\sqrt{x}} + e^{-p\sqrt{x}})^2} = \frac{2}{p^2} l2. \text{ V. T. 27, N. 1.}$$

$$21) \int \frac{e^{p\sqrt{x}} - e^{-p\sqrt{x}}}{(e^{p\sqrt{x}} + e^{-p\sqrt{x}})^2} dx = \frac{\pi}{2p} \text{ V. T. 27, N. 2.}$$

$$22) \int \frac{dx}{e^{qx} + 2 \cos \lambda + e^{-qx}} = \frac{\lambda}{2q} \operatorname{Cosec} \lambda \text{ V. T. 6, N. 3.}$$

$$23) \int \frac{e^{px} + e^{-px}}{e^{qx} + 2 \cos \lambda + e^{-qx}} dx = \frac{\pi}{q} \operatorname{Cosec} \lambda \cdot \operatorname{Cosec} \frac{p\pi}{q} \cdot \sin \frac{p\lambda}{q} \text{ V. T. 6, N. 19.}$$

$$24) \int \frac{e^{px} - 2 \cos \lambda + e^{-px}}{e^{qx} - 2 \cos \mu + e^{-qx}} dx = \frac{\pi}{q} \frac{\sin \left(p \frac{\pi - \mu}{q} \right)}{\sin \mu \cdot \sin \frac{p\pi}{q}} - \frac{\pi - \mu}{q \sin \mu} \cos \lambda \text{ V. T. 6, N. 20.}$$

$$25) \int \frac{dx}{e^{x^2} + 1 + e^{-x^2}} = \frac{1}{2} \operatorname{Cosec} \frac{\pi}{3} \cdot \sum_1^{\infty} (-1)^{n-1} \sin \frac{n\pi}{3} \cdot \sqrt{\frac{\pi}{n}} \text{ (VIII, 487).}$$

$$26) \int \frac{e^{qx} + \cos \lambda}{(e^{qx} + e^{-qx} + 2 \cos \lambda)^2} dx = \frac{1}{4q} \left[\lambda \operatorname{Cosec} \lambda - \frac{1}{1 + \cos \lambda} \right] \text{ V. T. 27, N. 22.}$$

$$27) \int \frac{(e^{px} - e^{-px})(e^{qx} - e^{-qx})}{(e^{qx} + e^{-qx} + 2 \cos \lambda)^2} dx = \frac{p\pi}{q^2} \operatorname{Cosec} \lambda \cdot \operatorname{Cosec} \frac{p\pi}{q} \cdot \sin \frac{p\lambda}{q} \text{ V. T. 27, N. 23.}$$

$$1) \int e^{-px^2 \pm qx} dx = e^{\frac{q^2}{4p}} \sqrt{\frac{\pi}{p}} \text{ (VIII, 429*)}. \quad 2) \int e^{(px^2 + qx)^i} dx = (1+i) e^{-\frac{q^2 i}{4p}} \sqrt{\frac{\pi}{2p}} \text{ (IV, 81).}$$

$$3) \int e^{-(px^2 + qx)^i} dx = (1-i) e^{\frac{q^2 i}{4p}} \sqrt{\frac{\pi}{2p}} \text{ (IV, 81).}$$

$$4) \int e^{(px^2 + \frac{q}{x^2})^i} dx = (1+i) e^{\frac{1}{2} \sqrt{pq}} \sqrt{\frac{\pi}{2p}} \text{ (IV, 82).}$$

$$5) \int e^{-(px^2 + \frac{q}{x^2})^i} dx = (1-i) e^{-\frac{1}{2} \sqrt{pq}} \sqrt{\frac{\pi}{2p}} \text{ (IV, 82).}$$

$$6) \int e^{-(x - \frac{q}{x})^{2a}} dx = \frac{1}{a} \Gamma \left(\frac{1}{2a} \right) \text{ Boole, C. & D. Math. Journ. V. 4, 14.}$$

$$7) \int \frac{e^{-px} dx}{1 + e^{-qx}} = \frac{\pi}{q} \operatorname{Cosec} \frac{p\pi}{q} \text{ V. T. 17, N. 10.}$$

$$8) \int \frac{(1 + e^{-x})^q - 1}{(1 + e^{-x})^{p+q}} dx = Z'(p+q) - Z'(p) \text{ V. T. 18, N. 5.}$$

$$9) \int \left[e^{px} - \frac{1}{(1 + e^{-x})^p} \right] e^{-(q+1)x} dx = \frac{q}{q-p+1} \frac{\Gamma(q) \Gamma(p-q)}{\Gamma(p)} \text{ V. T. 18, N. 10.}$$

$$10) \int \left[\frac{1}{1 + e^{-x}} - \frac{1}{(1 + e^{-x})^p} \right] dx = A + Z'(p) \text{ V. T. 18, N. 11.}$$

$$11) \int \left[\frac{1}{(1 + e^{-x})^q} - \frac{1}{1 + e^{-x}} \right] dx = Z'(p) - Z'(q) \text{ V. T. 18, N. 12.}$$

F. Exponentielle.

TABLE 29.

Lim. diverses.

$$1) \int_0^1 x^{-p} dx = \sum_{n=1}^{\infty} \frac{p^{n-1}}{n^n} \text{ (IV, 83).}$$

$$2) \int_0^1 e^{-p x^2} dx = \sqrt{\left[\frac{e^{-p}}{p} \sum_{n=1}^{\infty} \frac{p^n}{1^{n/1}} \sum_{m=1}^{n-1} \frac{(-1)^m}{2m+1} \right]} \text{ Raabe, Cr. B. 48, 137.}$$

$$3) \int_0^1 e^{q \sqrt{x}} dx = \frac{2}{q} \left(e^q - \frac{1}{q} e^q + \frac{1}{q} \right) \text{ V. T. 80, N. 1.}$$

$$4) \int_1^{\infty} e^{-q x - x^2} dx = \frac{e^{-q-1}}{q+2} \sum_{n=0}^{\infty} (-1)^n \frac{2^n 1^{n/2}}{(q+2)^{2n}} \text{ De Morgan, Int. Calc.}$$

$$5) \int_0^{2\pi} \frac{e^{-a x i} dx}{1 - p e^{x i}} = 2\pi p^a \text{ (VIII, 488).}$$

$$6) \int_0^{2\pi} \frac{p e^{x i} dx}{p e^{x i} \pm q e^{r i}} = 0 \text{ } [p < q], = 2\pi \text{ } [p > q] \text{ (VIII, 359).}$$

$$7) \int_{-\pi}^{\pi} (p e^{x i})^a dx = 0 \text{ V. T. 29, N. 8.}$$

$$8) \int_{-\pi}^{\pi} (q + p e^{x i})^a dx = 2\pi q^a \text{ (IV, 84).}$$

$$9) \int_{-\pi}^{\pi} (p e^{x i})^q dx = \frac{2}{q} p^q \sin q\pi \text{ (IV, 84).}$$

$$10) \int_{-\pi}^{\pi} e^{-a x i} e^{p e^{x i}} dx = \frac{2\pi}{1^{a/1}} p^a \text{ (IV, 84).}$$

$$11) \int_{-\pi}^{\pi} \frac{dx}{(q e^{x i})^a} = 0 \text{ V. T. 29, N. 12.}$$

$$12) \int_{-\pi}^{\pi} \frac{dx}{(q e^{r i} + p e^{x i})^a} = \frac{p\pi}{(q e^{r i})^a} [p < q], = 0 [p > q] \text{ (VIII, 359).}$$

$$13) \int_{-\pi}^{\pi} \frac{(e^{x i})^{a+1} dx}{\sqrt{1 - 2e^{x i} \cos \lambda + e^{2x i}}} = 0 \text{ (IV, 84).}$$

F. Logar. Forme rat. ent.

TABLE 30.

Lim. 0 et 1.

$$1) \int l(q + px) dx = \frac{q+p}{p} l(q+p) - \frac{q}{p} lq - 1 \text{ (VIII, 204).}$$

$$2) \int \left(l \frac{1}{x} \right)^p dx = 1^{p/1} = \Gamma(p+1) [-1 < p < \infty] \text{ (VIII, 554).}$$

$$3) \int \left(l \frac{1}{x} \right)^{\frac{2a-1}{2}} dx = \frac{1^{a/1}}{2^a} \sqrt{\pi} \text{ V. T. 81, N. 6.}$$

$$4) \int l l x dx = -A \text{ V. T. 353, N. 1.}$$

$$5) \int l(p + lx) dx = lp - e^{-p} Ei(p) \text{ V. T. 107, N. 22.}$$

$$6) \int l(p - lx) dx = lp - e^p Ei(-p) \text{ V. T. 107, N. 23.}$$

- 7) $\int l x \cdot l(1-x) dx = 2 - \frac{1}{6} \pi^2$ V. T. 30, N. 2 et T. 108, N. 6.
- 8) $\int l x \cdot l(1+x) dx = 2 - \frac{1}{12} \pi^2 - 2 l 2$ Winckler, Sitz. Ber. Wien. B. 43, 315.
- 9) $\int l x \cdot l(1-x^2) dx = 4 - \frac{1}{4} \pi^2 - 2 l 2$ V. T. 30, N. 7 et 8.
- 10) $\int \left(l \frac{1}{x}\right)^{p-1} l l \frac{1}{x} dx = Z'(p) \cdot \Gamma(p)$ (VIII, 554).

- 1) $\int \frac{dx}{\left(l \frac{1}{x}\right)^p} = \frac{\pi}{\Gamma(p)} \operatorname{Cosec} p \pi$ V. T. 30, N. 2. 2) $\int \frac{dx}{l l x} = 0$ (IV, 85).
- 3) $\int l \frac{1-p x}{1-p} \frac{dx}{l x} = - \sum_1^{\infty} \frac{p^n}{n} l(1+x) [p < 1]$ (VIII, 278).
- 4) $\int \frac{dx}{q + l x} = e^{-q} Ei(q)$ V. T. 91, N. 4. 5) $\int \frac{dx}{q - l x} = -e^q Ei(-q)$ V. T. 91, N. 1.
- 6) $\int \frac{dx}{q^2 + (l x)^2} = \frac{1}{q} [Ci(q) \cdot \sin q - Si(q) \cdot \cos q + \frac{1}{2} \pi \cos q]$ V. T. 91, N. 7.
- 7) $\int \frac{l x dx}{q^2 + (l x)^2} = Ci(q) \cdot \cos q + Si(q) \cdot \sin q - \frac{1}{2} \pi \sin q$ V. T. 91, N. 8.
- 8) $\int \frac{dx}{q^2 - (l x)^2} = \frac{1}{2q} [e^{-q} Ei(q) - e^q Ei(-q)]$ V. T. 31, N. 4, 5.
- 9) $\int \frac{l x dx}{q^2 - (l x)^2} = -\frac{1}{2} [e^{-q} Ei(q) + e^q Ei(-q)]$ V. T. 31, N. 4, 5.
- 10) $\int \frac{dx}{q^4 - (l x)^4} = -\frac{1}{4q^3} [e^q Ei(-q) - e^{-q} Ei(q) - 2 Ci(q) \cdot \sin q + 2 Si(q) \cdot \cos q - \pi \cos q]$
V. T. 91, N. 18.
- 11) $\int \frac{l x dx}{q^4 - (l x)^4} = -\frac{1}{4q^3} [e^q Ei(-q) + e^{-q} Ei(q) - 2 Ci(q) \cdot \cos q - 2 Si(q) \cdot \sin q + \pi \sin q]$
V. T. 91, N. 19.
- 12) $\int \frac{(l x)^2 dx}{q^4 - (l x)^4} = -\frac{1}{4q} [e^q Ei(-q) - e^{-q} Ei(q) + 2 Ci(q) \cdot \sin q - 2 Si(q) \cdot \cos q + \pi \cos q]$
V. T. 91, N. 20.
- 13) $\int \frac{(l x)^2 dx}{q^4 - (l x)^4} = -\frac{1}{4} [e^{-q} Ei(q) + e^q Ei(-q) + 2 Ci(q) \cdot \cos q + 2 Si(q) \cdot \sin q - \pi \sin q]$
V. T. 91, N. 21.

$$14) \int \frac{dx}{(q+lx)^2} = -\frac{1}{q} + e^{-q} Ei(q) \text{ V. T. 31, N. 4.}$$

$$15) \int \frac{lx dx}{(q+lx)^2} = 1 + (1-q)e^{-q} Ei(q) \text{ V. T. 125, N. 12.}$$

$$16) \int \frac{dx}{(q-lx)^2} = \frac{1}{q} + e^q Ei(-q) \text{ V. T. 31, N. 5.}$$

$$17) \int \frac{lx dx}{(q-lx)^2} = 1 + (q+1)e^q Ei(-q) \text{ V. T. 125, N. 14.}$$

$$18) \int \frac{dx}{\{q^2 + (lx)^2\}^2} = \frac{1}{2q^3} [Ci(q) \cdot Sin q - Si(q) \cdot Cos q + \frac{1}{2} \pi Cos q] + \frac{1}{2q^2} [Ci(q) \cdot Cos q + Si(q) \cdot Sin q - \frac{1}{2} \pi Sin q] \text{ V. T. 92, N. 6.}$$

$$19) \int \frac{lx dx}{\{q^2 + (lx)^2\}^2} = \frac{1}{2q} [Ci(q) \cdot Sin q - Si(q) \cdot Cos q + \frac{1}{2} \pi Cos q] - \frac{1}{2q^2} \text{ V. T. 92, N. 7.}$$

$$20) \int \frac{dx}{\{q^2 - (lx)^2\}^2} = \frac{1}{4q^3} [(q-1)e^q Ei(-q) + (1+q)e^{-q} Ei(q)] \text{ V. T. 92, N. 8.}$$

$$21) \int \frac{lx dx}{\{q^2 - (lx)^2\}^2} = \frac{1}{4q^2} [-1 + q \{e^q Ei(-q) - e^{-q} Ei(q)\}] \text{ V. T. 92, N. 9.}$$

$$22) \int \frac{dx}{\{q+lx\}^a} = \frac{1}{1^{a-1/1}} e^{-q} Ei(q) - \frac{1}{1^{a-1/1}} \sum_1^{a-1} 1^{a-n-1/1} q^{n-a} \text{ V. T. 92, N. 5.}$$

$$23) \int \frac{dx}{\{q-lx\}^a} = \frac{(-1)^a}{1^{a-1/1}} e^q Ei(-q) + \frac{(-1)^{a-1}}{1^{a-1/1}} \sum_1^{a-1} 1^{a-n-1/1} (-l)^{n-a} \text{ V. T. 92, N. 2.}$$

$$1) \int dx \sqrt[l]{\frac{1}{x}} = \frac{1}{2} \sqrt{\pi} \text{ (VIII, 542).}$$

$$2) \int dx ll \left(\sqrt[l]{\frac{1}{x}} \right) = -A - lq \text{ V. T. 256, N. 2.}$$

$$3) \int \frac{dx}{\sqrt[l]{\frac{1}{x}}} = \sqrt{\pi} \text{ (VIII, 542).}$$

$$4) \int \frac{dx}{\sqrt[l]{\frac{1}{x}}} ll \frac{1}{x} = -(A + 2l2) \sqrt{\pi} \text{ V. T. 256, N. 8.}$$

$$5) \int \frac{dx}{\sqrt[l]{\left(\sqrt[l]{\frac{1}{x}} \right)}} ll \left(\sqrt[l]{\frac{1}{x}} \right) = -(A + lq + 2l2) \sqrt{\frac{\pi}{q}} \text{ V. T. 256, N. 8.}$$

$$6) \int l(1 - \sqrt{x}) dx = -\frac{3}{2} \text{ V. T. 106, N. 6.}$$

$$7) \int l(1 + \sqrt[n]{x}) dx = l2 + \sum_1^n \frac{(-1)^n}{q+n} \text{ V. T. 106, N. 4.}$$

$$1) \int_0^\infty l x \cdot l \frac{p^2 + x^2}{q^2 + x^2} dx = \pi(q-p) + \pi l \frac{p^p}{q^q} \text{ (VIII, 608).}$$

$$2) \int_0^\infty l x \cdot l \left(1 + \frac{q^2}{x^2}\right) dx = \pi q(lq - 1) \text{ (VIII, 608).}$$

$$3) \int_0^\infty l(1 + p^2 x^2) \cdot l \left(1 + \frac{q^2}{x^2}\right) dx = 2\pi \left[\frac{1+pq}{p} l(1+pq) - q \right] \text{ (VIII, 608).}$$

$$4) \int_0^\infty l(p^2 + x^2) \cdot l \left(1 + \frac{q^2}{x^2}\right) dx = 2\pi [(p+q)l(p+q) - plp - q] \text{ (VIII, 608).}$$

$$5) \int_0^\infty l \left(1 + \frac{p^2}{x^2}\right) \cdot l \left(1 + \frac{q^2}{x^2}\right) dx = 2\pi [(p+q)l(p+q) - plp - qlq] \text{ (VIII, 608).}$$

$$6) \int_0^\infty \left\{ l \left(1 + \frac{p^2}{x^2}\right) \right\}^2 dx = 4p\pi l2 \text{ (VIII, 608).}$$

$$7) \int_0^\infty l \left(p^2 + \frac{1}{x^2}\right) \cdot l \left(1 + \frac{q^2}{x^2}\right) dx = 2\pi \left[\frac{1+pq}{p} l(1+pq) - qlq \right] \text{ (VIII, 608).}$$

$$8) \int_0^p \frac{dx}{lx} = li(p) = Ei(lp) \text{ (IV, 87).}$$

$$9) \int_0^\infty \frac{dx}{l \frac{1}{x}} = -\infty \text{ (IV, 87).}$$

$$10) \int_1^e \frac{dx lx}{(1+lx)^2} = \frac{1}{2} e - 1 \text{ V. T. 80, N. 6.}$$

$$1) \int \text{Tang}^p x dx = \sum_0^\infty \frac{(-1)^n}{p+2n+1} \text{ (VIII, 577)} = \frac{1}{4} \left\{ Z' \left(\frac{p+3}{4} \right) - Z' \left(\frac{p+1}{4} \right) \right\} \text{ V. T. 2, N. 7.}$$

$$2) \int \text{Tang}^{2a} x dx = (-1)^a \frac{\pi}{4} + \sum_0^{a-1} \frac{(-1)^n}{2a-2n-1} \text{ (VIII, 241).}$$

$$3) \int \text{Tang}^{2a+1} x dx = (-1)^a \frac{1}{2} l2 + \sum_0^{a-1} \frac{(-1)^n}{2a-2n} \text{ (VIII, 241).}$$

- $$4) \int \text{Tang}^p x \cdot \text{Sin}^2 x dx = \frac{1+p}{8} \left[Z' \left(\frac{p+3}{4} \right) - Z' \left(\frac{p+1}{4} \right) \right] - \frac{1}{4} \text{ V. T. 34, N. 1, 5.}$$
- $$5) \int \text{Tang}^p x \cdot \text{Cos}^2 x dx = \frac{1-p}{8} \left[Z' \left(\frac{p+3}{4} \right) - Z' \left(\frac{p+1}{4} \right) \right] + \frac{1}{4} \text{ V. T. 3, N. 11.}$$
- $$6) \int \text{Tang}^p x \cdot \text{Cos} 2x dx = \frac{1}{2} - \frac{p}{4} \left[Z' \left(\frac{p+3}{4} \right) - Z' \left(\frac{p+1}{4} \right) \right] \text{ V. T. 34, N. 1, 5.}$$
- $$7) \int \text{Cos}^{p-1} 2x \cdot \text{Tg} x dx = \frac{1}{4} \left[Z' \left(\frac{p+1}{2} \right) - Z' \left(\frac{p}{2} \right) \right] \text{ V. T. 2, N. 1.}$$
- $$8) \int [\text{Sin}^2 2x - 1] \text{Tg} \left(\frac{\pi}{4} + x \right) dx = -\frac{1}{2} \sum_{n=1}^{\infty} \frac{1}{n} \text{ V. T. 2, N. 2.}$$
- $$9) \int [\text{Sin}^q 2x - \text{Sin}^p 2x] \text{Tg} \left(\frac{\pi}{4} + x \right) dx = \frac{1}{2} [Z'(p+1) - Z'(q+1)] \left[\frac{p^2}{q^2} \leq \frac{1}{1} \right] \text{ V. T. 2, N. 4.}$$
- $$10) \int [\text{Sin}^p 2x - \text{Sin}^{1-p} 2x] \text{Tg} \left(\frac{\pi}{4} + x \right) dx = \frac{1}{2} \pi \text{Cot} p \pi \text{ V. T. 4, N. 4.}$$

- $$1) \int \frac{\text{Cos}^q 2x}{\text{Cos}^{2(q+1)} x} dx = 2^{2q} \frac{\{\Gamma(q+1)\}^2}{\Gamma(2q+2)} \text{ V. T. 1, N. 1.}$$
- $$2) \int \frac{\text{Cos}^q 2x \cdot \text{Sin}^{2a-1} x dx}{\text{Cos}^{2a+2q+1} x} = \frac{1^{a-1/2}}{2(q+1)^{a/2}} \text{ V. T. 1, N. 11.}$$
- $$3) \int \frac{\text{Cos}^q 2x \cdot \text{Sin}^{2a} x dx}{\text{Cos}^{2a+2q+1} x} = \frac{2^{a/2}}{(2q+1)^{a+1/2}} \text{ V. T. 1, N. 12.}$$
- $$4) \int \frac{\text{Sin}^{2p-1} x dx}{\text{Cos}^p 2x} = \frac{\Gamma(2p-1)\Gamma(1-p)}{2^{2p-1}\Gamma(p)} \text{ V. T. 3, N. 12.}$$
- $$5) \int \frac{1 - \text{Tang} x}{\text{Cos} 2x} \text{Sin}^2 x dx = \frac{3}{4} \ln 2 - \frac{\pi}{8} \text{ V. T. 2, N. 11.}$$
- $$6) \int \frac{1 - \text{Tang}^3 x}{\text{Cos} 2x} \text{Cos}^2 x dx = \frac{3}{4} \ln 2 + \frac{\pi}{8} \text{ V. T. 2, N. 10.}$$
- $$7) \int [\text{Cos}^{p-1} 2x - \text{Sec}^p 2x] \text{Cot} x dx = \frac{1}{2} \pi \text{Cot} p \pi \text{ V. T. 4, N. 4.}$$
- $$8) \int [\text{Cos}^{p-1} 2x + \text{Sec}^p 2x] \text{Tg} x dx = \frac{1}{2} \pi \text{Cosec} p \pi \text{ V. T. 4, N. 1.}$$

- 9) $\int [\text{Tang}^p x + \text{Cot}^p x] dx = \frac{1}{2} \pi \text{Sec} \frac{1}{2} p \pi [p^2 < 1] \text{ V. T. 4, N. 7.}$
- 10) $\int \frac{\text{Tang}^{p-1} x - \text{Cot}^{p-1} x}{\text{Cos } 2x} dx = \frac{1}{2} \pi \text{Cot} \frac{1}{2} p \pi \text{ V. T. 4, N. 4.}$
- 11) $\int \frac{\text{Cos}^2 2x - 1}{\text{Tang } x} dx = -\frac{1}{2} \sum_1 \frac{1}{n} \text{ V. T. 2, N. 2.}$
- 12) $\int \frac{\text{Cos}^q 2x - \text{Cos}^p 2x}{\text{Tang } x} dx = \frac{1}{2} \{Z'(p+1) - Z'(q+1)\} \text{ V. T. 2, N. 4.}$
- 13) $\int \frac{1 - \text{Sec}^p 2x}{\text{Tang } x} dx = \frac{1}{2} \{A + Z'(1-p)\} [p < 1] \text{ V. T. 4, N. 5.}$
- 14) $\int \frac{\text{Cos}^p 2x - \text{Sec}^p 2x}{\text{Tang } x} dx = -\frac{1}{2p} + \frac{\pi}{2} \text{Cot } p \pi \text{ V. T. 4, N. 3.}$
- 15) $\int [\text{Tg}^p x - \text{Cot}^p x] \text{Tg } x dx = \frac{1}{p} - \frac{\pi}{2} \text{Cosec} \frac{1}{2} p \pi \text{ V. T. 4, N. 8.}$
- 16) $\int (\text{Tg}^p x + \text{Cot}^p x) (\text{Tg}^q x + \text{Cot}^q x) dx = 2\pi \frac{\text{Cos} \frac{1}{2} p \pi \cdot \text{Cos} \frac{1}{2} q \pi}{\text{Cos } p \pi + \text{Cos } q \pi} \text{ V. T. 4, N. 9.}$
- 17) $\int (\text{Tg}^p x - \text{Cot}^p x) (\text{Tg}^q x - \text{Cot}^q x) dx = 2\pi \frac{\text{Sin} \frac{1}{2} p \pi \cdot \text{Sin} \frac{1}{2} q \pi}{\text{Cos } p \pi + \text{Cos } q \pi} \text{ V. T. 4, N. 10.}$
- 18) $\int (\text{Sin}^{p-1} 2x + \text{Cosec}^p 2x) \text{Cot} \left(\frac{\pi}{4} + x \right) dx = \frac{1}{2} \pi \text{Cosec } p \pi \text{ V. T. 4, N. 1.}$
- 19) $\int (\text{Sin}^p 2x - \text{Cosec}^p 2x) \text{Cot} \left(\frac{\pi}{4} + x \right) dx = \frac{1}{2p} - \frac{\pi}{2} \text{Cosec } p \pi \text{ V. T. 4, N. 2.}$
- 20) $\int \frac{\text{Sin}^p 2x - 1}{\text{Sin}^p 2x} \text{Tg} \left(\frac{\pi}{4} + x \right) dx = \frac{1}{2} \{A + Z'(1-p)\} [p < 1] \text{ V. T. 4, N. 5.}$
- 21) $\int \frac{\text{Sin}^{p-1} 2x - 1}{\text{Sin}^p 2x} \text{Tg} \left(\frac{\pi}{4} + x \right) dx = -\frac{1}{2p} + \frac{1}{2} \pi \text{Cot } p \pi \text{ V. T. 4, N. 3.}$
- 22) $\int (\text{Cos}^p 2x - \text{Sec}^p 2x) \text{Tg } x dx = \frac{1}{2p} - \frac{1}{2} \pi \text{Cosec } p \pi \text{ V. T. 4, N. 2.}$
- 23) $\int \frac{\text{Tg}^p x - \text{Cot}^p x}{\text{Cos } 2x} \text{Tg } x dx = -\frac{1}{p} + \frac{1}{2} \pi \text{Cot} \frac{1}{2} p \pi \text{ V. T. 4, N. 12.}$
- 24) $\int \frac{(\text{Cos } x - \text{Sin } x)^{1-p} \text{Sin}^p x}{\text{Cos}^2 x} dx = \frac{1-p}{2} p \pi \text{Cosec } p \pi \text{ V. T. 23, N. 1.}$
- 25) $\int \frac{(\text{Tg}^p x - \text{Cot}^p x) (\text{Tg}^q x + \text{Cot}^q x)}{\text{Cos } 2x} dx = \frac{-\pi \text{Sin } p \pi}{\text{Cos } p \pi + \text{Cos } q \pi} \left[\begin{matrix} p < 1, \\ q < 1 \end{matrix} \right] \text{ V. T. 4, N. 13.}$

$$26) \int \frac{\cos^p 2x - \cos^{1-p} 2x}{\tan x} \frac{dx}{\cos 2x} = \frac{1}{2} \pi \cot p\pi \quad \text{V. T. 4, N. 4.}$$

$$27) \int \frac{(\cos x - \sin x)^p}{\sin^p x \cdot \sin 2x} dx = -\frac{1}{2} \pi \operatorname{Cosec} p\pi \quad \text{V. T. 3, N. 5.}$$

$$28) \int \sin(p \operatorname{Tg} x) \frac{dx}{\sin 2x} = \frac{1}{2} \operatorname{Si}(p) \quad \text{V. T. 149, N. 5.}$$

$$29) \int \cos(p \operatorname{Cot} x) \frac{dx}{\sin 2x} = -\frac{1}{2} \operatorname{Ci}(p) \quad \text{V. T. 226, N. 1.}$$

$$30) \int \frac{\cos(q \operatorname{Tg} x) - \cos(q \operatorname{Cot} x)}{\cos 2x} dx = \frac{1}{2} \pi \sin q \quad \text{V. T. 149, N. 11.}$$

$$31) \int [\operatorname{Tang}^{p-1} x + \operatorname{Cot}^{p-1} x] \sin 2x dx = \frac{1}{2} \frac{p\pi}{e^{\frac{1}{2}p\pi} - e^{-\frac{1}{2}p\pi}} \quad \text{V. T. 3, N. 13.}$$

$$1) \int \frac{\operatorname{Tang} x dx}{1 + \cos \lambda \cdot \sin 2x} = -\frac{1}{2} \lambda \operatorname{Cot} \lambda + i \left(2 \cos \frac{1}{2} \lambda \right) \quad \text{V. T. 6, N. 4.}$$

$$2) \int \frac{\operatorname{Tang} x dx}{1 - p \sin 2x} = \frac{1}{2} i \{ 2(1-p) \} + \frac{p}{\sqrt{1-p^2}} \operatorname{Arctg} \left(\sqrt{\frac{1+p}{1-p}} \right) [p^2 < 1], = \frac{1}{2} i \{ 2(p-1) \} - \frac{p}{2\sqrt{p^2-1}} i \{ p + \sqrt{p^2-1} \} [p^2 > 1] \quad \text{V. T. 6, N. 2.}$$

$$3) \int \frac{\operatorname{Tang}^p x dx}{1 + \sin x \cdot \cos x} = \frac{1}{3} \left\{ Z' \left(\frac{p+2}{3} \right) - Z' \left(\frac{p+1}{3} \right) \right\} \quad \text{V. T. 6, N. 7.}$$

$$4) \int \frac{\operatorname{Tang}^p x dx}{1 - \sin x \cdot \cos x} = \frac{1}{6} \left\{ Z' \left(\frac{p+5}{6} \right) - Z' \left(\frac{p+2}{6} \right) + Z' \left(\frac{p+4}{6} \right) - Z' \left(\frac{p+1}{6} \right) \right\} \quad \text{V. T. 36, N. 5.}$$

$$5) \int \frac{\operatorname{Tang}^c x dx}{1 + \cos \frac{a\pi}{b} \cdot \sin 2x} = \frac{1}{2b} \operatorname{Cosec} \frac{a\pi}{b} \cdot \sum_0^{b-1} (-1)^{n-1} \sin \frac{na\pi}{b} \cdot \left\{ Z' \left(\frac{b+c+n}{2b} \right) - Z' \left(\frac{c+n}{2b} \right) \right\}$$

$$[a+b \text{ impair}], = \frac{1}{b} \operatorname{Cosec} \frac{a\pi}{b} \cdot \sum_0^{b-1} (-1)^{n-1} \sin \frac{na\pi}{b} \cdot \left\{ Z' \left(\frac{b+c-n}{b} \right) - Z' \left(\frac{c+n}{b} \right) \right\} \quad \left[\begin{smallmatrix} a+b \\ \text{pair} \end{smallmatrix} \right]$$

V. T. 6, N. 7.

$$6) \int \frac{\operatorname{Tg}^p x + \operatorname{Cot}^p x}{1 + \cos \lambda \cdot \sin 2x} dx = \pi \operatorname{Cosec} \lambda \cdot \operatorname{Cosec} p\pi \cdot \sin p\lambda \quad \text{V. T. 6, N. 8.}$$

$$7) \int \frac{1 - \operatorname{Tg} x}{1 - \cos \lambda \cdot \sin 2x} dx = \operatorname{Cosec} \lambda \cdot \sum_1^\infty \frac{\sin n\lambda}{n(n+1)} \quad \text{V. T. 6, N. 5.}$$

$$8) \int \frac{\sin \lambda - \operatorname{Tang}^a x \cdot \sin \{(a+1)\lambda\} + \operatorname{Tang}^{a+1} x \cdot \sin a\lambda}{1 - \cos \lambda \cdot \sin 2x} \operatorname{Tang} x dx = \sum_1^n \frac{\sin n\lambda}{n+1} \text{ V. T. 6, N. 12.}$$

$$9) \int \frac{1 - \operatorname{Tang} x \cdot \cos \lambda - \operatorname{Tg}^{a+1} x \cdot \cos \{(a+1)\lambda\} + \operatorname{Tang}^{a+1} x \cdot \cos a\lambda}{1 - \cos \lambda \cdot \sin 2x} dx = \sum_0^n \frac{\cos n\lambda}{n+1} \text{ V. T. 6, N. 11.}$$

$$10) \int \frac{\operatorname{Tang}^p x dx}{1 - \sin^2 x \cdot \cos^2 x} = \frac{1}{6} \left\{ -Z' \left(\frac{p+1}{6} \right) - Z' \left(\frac{p+2}{6} \right) + Z' \left(\frac{p+4}{6} \right) + Z' \left(\frac{p+5}{6} \right) + 2Z' \left(\frac{p+2}{3} \right) - \right. \\ \left. - 2Z' \left(\frac{p+1}{3} \right) \right\} \text{ V. T. 36, N. 3, 4.}$$

$$11) \int \frac{\sin^2 x dx}{1 - 2r \cos 2x + r^2} = \frac{\pi}{16r} + \frac{1}{4r} \frac{1-r}{1+r} \operatorname{Arctg} \frac{1+r}{1-r} \text{ (VIII, 539).}$$

$$12) \int \frac{\cos^2 x dx}{1 - 2r \cos 2x + r^2} = -\frac{\pi}{16r} - \frac{1}{4r} \frac{1+r}{1-r} \operatorname{Arctg} \frac{1+r}{1-r} \text{ (VIII, 539).}$$

$$1) \int \frac{\sin^{p-1} 2x dx}{(\cos x + \sin x)^{2p}} = \frac{1}{2^{p+1}} \frac{\Gamma(p) \sqrt{\pi}}{\Gamma(p+\frac{1}{2})} \text{ V. T. 3, N. 2.}$$

$$2) \int \frac{\operatorname{Tg}^c x \cdot \cos^2 x dx}{\left(1 + \sin 2x \cdot \cos \frac{a\pi}{b}\right)^2} = \frac{1}{4b \sin^2 \frac{a\pi}{b}} \left\{ \frac{1}{2} + \sum_1^{b-1} (-1)^{n-1} \sin \frac{na\pi}{b} \cdot \left[(1-c) \left\{ Z' \left(\frac{b+c+n}{2b} \right) - \right. \right. \right. \right. \\ \left. \left. \left. - Z' \left(\frac{c+n}{2b} \right) \right\} - c \cos \frac{a\pi}{b} \cdot \left\{ Z' \left(\frac{b+c+n-1}{2b} \right) - Z' \left(\frac{c+n-1}{2b} \right) \right\} \right] \right\} \left[\begin{matrix} a+b \\ \text{imp.} \end{matrix} \right] \\ = \frac{1}{2b \sin^2 \frac{a\pi}{b}} \left\{ \frac{1}{2} + \sum_1^{b-1} (-1)^{n-1} \sin \frac{na\pi}{b} \cdot \left[(1-c) \left\{ Z' \left(\frac{b+c-n}{b} \right) - \right. \right. \right. \right. \\ \left. \left. \left. - Z' \left(\frac{c+n}{b} \right) \right\} - c \cos \frac{a\pi}{b} \cdot \left\{ Z' \left(\frac{b+c-n-1}{b} \right) - Z' \left(\frac{c+n-1}{b} \right) \right\} \right] \right\} \left[\begin{matrix} a+b \\ \text{pair} \end{matrix} \right] \\ \text{V. T. 6, N. 17.}$$

$$3) \int \frac{\operatorname{Tg}^{p-1} x + \operatorname{Cot}^p x}{\sin x + \cos x} \frac{dx}{\cos x} = \pi \operatorname{Cosec} p\pi \text{ V. T. 4, N. 1.}$$

$$4) \int \frac{\operatorname{Tg}^p x - \operatorname{Cot}^p x}{\sin x + \cos x} \frac{dx}{\cos x} = \frac{1}{p} - \pi \operatorname{Cosec} p\pi \text{ V. T. 4, N. 2.}$$

$$5) \int \frac{\operatorname{Tg}^q x - \operatorname{Tg}^p x}{\cos x - \sin x} \frac{dx}{\cos x} = Z'(1+p) - Z'(1+q) \text{ V. T. 2, N. 4.}$$

$$6) \int \frac{\operatorname{Cot}^q x - \operatorname{Cot}^p x}{\cos x - \sin x} \frac{dx}{\cos x} = Z'(p) - Z'(q) \text{ V. T. 4, N. 5.}$$

$$7) \int \frac{Tg^{p-1} x - Cot^p x}{Cos x - Sin x} \frac{dx}{Cos x} = \pi Cot p \pi \text{ V. T. 4, N. 4.}$$

$$8) \int \frac{Tg^p x - Cot^p x}{Cos x - Sin x} \frac{dx}{Cos x} = \pi Cot p \pi - \frac{1}{p} \text{ V. T. 4, N. 3.}$$

$$9) \int \frac{Cot^p x - 1}{Cos x - Sin x} \frac{dx}{Sin x} = -A - Z'(1-p) \text{ V. T. 4, N. 5.}$$

$$10) \int \frac{Tg^q x - Tg^p x}{Cos x - Sin x} \frac{dx}{Sin x} = Z'(p) - Z'(q) \text{ V. T. 4, N. 5.}$$

$$11) \int \frac{Tg^p x - Tg^{1-p} x}{Cos x - Sin x} \frac{dx}{Sin x} = \pi Cot p \pi \text{ V. T. 4, N. 4.}$$

$$12) \int \frac{1}{Tg^p x + Cot^p x} \frac{dx}{Sin 2x} = \frac{\pi}{8p} \text{ V. T. 4, N. 14.}$$

$$13) \int \frac{Tg^q x + Cot^q x}{Tg^p x + Cot^p x} \frac{dx}{Sin 2x} = \frac{\pi}{4p} Sec \frac{q\pi}{2p} \text{ V. T. 4, N. 14.}$$

$$14) \int \frac{Tg^q x - Cot^q x}{Tg^p x - Cot^p x} \frac{dx}{Sin 2x} = \frac{\pi}{4p} Tang \frac{q\pi}{2p} \text{ V. T. 4, N. 15.}$$

$$15) \int \frac{Cos 2x}{1 + Sin 2x \cdot Cos \lambda} \frac{dx}{Cos^2 x} = Cos \lambda \cdot l \{2(1 + Cos \lambda)\} - 1 + \lambda Sin \lambda \text{ V. T. 6, N. 6.}$$

$$16) \int \frac{Sin^p x}{(Cos x - Sin x)^{p+1}} \frac{dx}{Cos x} = -\pi Cosec p \pi \text{ V. T. 3, N. 5.}$$

$$17) \int \frac{Sin^p x}{(Cos x - Sin x)^p} \frac{dx}{Cos^2 x} = p \pi Cosec p \pi \text{ V. T. 3, N. 4.}$$

$$18) \int \frac{Sin^p x}{(Cos x - Sin x)^{p-1}} \frac{dx}{Cos^2 x} = \frac{1-p}{2} p \pi Cosec p \pi \text{ V. T. 23, N. 1.}$$

$$19) \int \frac{dx}{(Tg^q x + Cot^q x)^{2p} Sin 2x} = \frac{\{\Gamma(p)\}^2}{8q\Gamma(2p)} \text{ V. T. 4, N. 16.}$$

$$20) \int \frac{Sin^p x}{(Cos x - Sin x)^{p+1} Sin 2x} = \frac{1}{2} \pi Cosec p \pi \text{ V. T. 3, N. 5.}$$

$$21) \int \frac{Tg^{p-q} x + Cot^{p-q} x}{(Tg^q x + Cot^q x)^{p+q}} \frac{dx}{Sin 2x} = \frac{1}{4} \frac{\Gamma(p)\Gamma(q)}{\Gamma(p+q)} \text{ V. T. 4, N. 17.}$$

$$22) \int \frac{Tg^p x + Cot^p x}{Tg^q x + 2 Cos \lambda + Cot^q x} \frac{dx}{Sin 2x} = \frac{\pi}{2q} Cosec \lambda \cdot Cosec \frac{p\pi}{q} \cdot Sin \frac{p\lambda}{q} \text{ V. T. 6, N. 19.}$$

$$23) \int \frac{Tg^p x - 2 Cos \lambda + Cot^p x}{Tg^q x + 2 Cos \mu + Cot^q x} \frac{dx}{Sin 2x} = \frac{\pi}{2q} Cosec \mu \cdot Cosec \frac{p\pi}{q} \cdot Sin \frac{p\mu}{q} - \frac{\mu}{2q} Cosec \mu \cdot Cos \lambda \text{ V. T. 6, N. 20.}$$

$$1) \int dx \sqrt{1 - Tg^4 x} = \sqrt{2} \cdot \left[F' \left(\sin \frac{\pi}{4} \right) - E' \left(\sin \frac{\pi}{4} \right) \right] \text{ (VIII, 321).}$$

$$2) \int [\sqrt{Tg x} + \sqrt{Cot x}] dx = \frac{1}{2} \pi \sqrt{2} \text{ V. T. 10, N. 1.}$$

$$3) \int \frac{Cos^{a-\frac{1}{2}} 2x dx}{Cos^{2a+1} x} = \frac{1^{a/2}}{1^{a/2}} \frac{\pi}{2^{a+1}} \text{ V. T. 7, N. 1.}$$

$$4) \int \frac{Sin^{2a-1} x}{Cos^{2a+1} x} dx \sqrt{Cos 2x} = \frac{2^{a-1/2}}{3^{a/2}} \text{ V. T. 7, N. 2.}$$

$$5) \int \frac{Sin^{2a} x}{Cos^{2a+1} x} dx \sqrt{Cos 2x} = \frac{3^{a-1/2}}{4^{a/2}} \frac{\pi}{4} \text{ V. T. 7, N. 3.}$$

$$6) \int \frac{Sin^{2a-1} x}{Cos^{2a+1} x} Cos^{b-\frac{1}{2}} 2x dx = \frac{2^{a-1/2}}{(2b+1)^{a/2}} \text{ V. T. 7, N. 5.}$$

$$7) \int \frac{Sin^{2a} x}{Cos^{2a+1} x} Cos^{b-\frac{1}{2}} 2x dx = \frac{1^{a/2} 1^{b/2}}{1^{a+b/2}} \frac{\pi}{2^{a+b+1}} \text{ V. T. 7, N. 4.}$$

$$8) \int \frac{Sin^{2p} x dx}{Cos^{p+\frac{1}{2}} 2x \cdot Cos x} = \frac{1}{2} \pi Sec p \pi \text{ V. T. 8, N. 12.}$$

$$9) \int \frac{dx \sqrt{Cos 2x}}{Cos^2 x} = \sqrt{2} \cdot \left[F' \left(\sin \frac{\pi}{4} \right) - E' \left(\sin \frac{\pi}{4} \right) \right] \text{ (VIII, 321).}$$

$$10) \int \frac{Tg^3 x dx}{\sqrt{Cos 2x}} = \frac{1}{2} \text{ V. T. 8, N. 1.}$$

$$11) \int \frac{(Cot x - 1)^{p+\frac{1}{2}} dx}{Cos^2 x} = \frac{2p+1}{2} \pi Sec p \pi \text{ V. T. 8, N. 11.}$$

$$12) \int \frac{(Cot x - 1)^{p-\frac{1}{2}} dx}{Sin^2 x} = \pi Sec p \pi \text{ V. T. 8, N. 12.}$$

$$13) \int [Tg^{p-1} x + Tg^{q-1} x] Sec^{\frac{p+q}{2}} 2x \cdot Cos^{p+q-2} x dx = \frac{1}{2} Cos \left\{ \frac{q-p}{4} \pi \right\} \cdot Sec \left(\frac{q+p}{4} \pi \right) \frac{\Gamma(\frac{1}{2} p) \Gamma(\frac{1}{2} q)}{\Gamma(\frac{1}{2} [p+q])} \text{ V. T. 8, N. 25.}$$

$$14) \int [Tg^{p-1} x - Tg^{q-1} x] Sec^{\frac{p+q}{2}} 2x \cdot Cos^{p+q-2} x dx = \frac{1}{2} Sin \left\{ \frac{q-p}{4} \pi \right\} \cdot Cosc \left(\frac{q+p}{4} \pi \right) \frac{\Gamma(\frac{1}{2} p) \Gamma(\frac{1}{2} q)}{\Gamma(\frac{1}{2} [p+q])} \text{ V. T. 8, N. 26.}$$

$$15) \int \frac{Sin^{2a} x dx}{Cos^{2a+1} x \cdot \sqrt{Cos 2x}} = \frac{3^{a-1/2}}{2^{a/2}} \frac{\pi}{2} \text{ V. T. 8, N. 13.}$$

$$16) \int \frac{Sin^{2a-1} x dx}{Cos^{2a} x \cdot \sqrt{Cos 2x}} = \frac{2^{a-1/2}}{1^{a/2}} \text{ V. T. 8, N. 14.}$$

$$17) \int \frac{\sin^{p-\frac{1}{2}} 2x dx}{\cos^p 2x \cdot \cos x} = \frac{2}{2p-1} \frac{\Gamma(p+\frac{1}{2})\Gamma(1-p)}{\sqrt{\pi}} \sin\left\{\frac{2p-1}{4}\pi\right\} \text{ V. T. 8, N. 24.}$$

$$18) \int \frac{1}{\sqrt[3]{\sin^2 x \cdot \cos x}} \frac{dx}{\sqrt{\cos 2x}} = \frac{3}{\sqrt[3]{3}} F\left(\sin \frac{\pi}{12}\right) \text{ V. T. 10, N. 6.}$$

$$19) \int \frac{1}{\sqrt[3]{\sin x \cdot \cos^2 x}} \frac{dx}{\sqrt{\cos 2x}} = \frac{1}{\sqrt[3]{3}} F\left(\cos \frac{\pi}{12}\right) \text{ V. T. 10, N. 5.}$$

$$20) \int \frac{\sqrt[3]{\operatorname{Tg} x}}{\sqrt{\cos 2x} \cos x} dx = \frac{1-\sqrt{3}}{\sqrt[3]{3}} F\left(\cos \frac{\pi}{12}\right) + 2\sqrt[3]{3} E\left(\cos \frac{\pi}{12}\right) \text{ V. T. 8, N. 22.}$$

$$21) \int \frac{\sqrt[3]{\operatorname{Tg}^3 x}}{\sqrt{\cos 2x} \cos x} dx = 3\sqrt[3]{3} E\left(\sin \frac{\pi}{12}\right) - 3 \frac{1+\sqrt{3}}{2\sqrt[3]{3}} F\left(\sin \frac{\pi}{12}\right) \text{ V. T. 8, N. 23.}$$

$$22) \int (\cot x - 1)^{p-1} \frac{dx}{\sin 2x} = \frac{1}{2} \pi \operatorname{Cosec} p\pi \text{ (VIII, 545).}$$

$$23) \int (\sec^{\frac{1}{2}} 2x - 1) \frac{dx}{\operatorname{Tg} x} = 12 \text{ (IV, 96).}$$

$$24) \int (\cos x - \sin x)^{a-\frac{1}{2}} \frac{dx}{\cos^{a+1} x \cdot \sqrt{\sin x}} = \pi \frac{1^{a/2}}{2^{a/2}} \text{ V. T. 10, N. 3.}$$

$$25) \int (\cos x - \sin x)^{a-\frac{1}{2}} \frac{\operatorname{Tg}^b x dx}{\cos^{a+1} x \cdot \sqrt{\sin x}} = \pi \frac{1^{a/2} 1^{b/2}}{2^{a+b/2}} \text{ V. T. 10, N. 4.}$$

$$26) \int \frac{dx}{\cos^2 x} \sqrt{\frac{\cos^2 x - p^2 \sin^2 x}{\cos 2x}} = E'(p) \text{ V. T. 8, N. 15.}$$

$$27) \int \frac{dx}{\cos^2 x} \sqrt{\frac{\cos^4 x - p^2 \sin^4 x}{\cos 2x}} = \frac{cF'(c) + bF'(b)}{(b+c)^2} + \frac{b-c}{(b+c)^2} \{E(b) - E(c)\} \left[\begin{array}{l} 2c^2 = \frac{(1-\sqrt{p})^2}{1+p} \\ 2b^2 = \frac{(1+\sqrt{p})^2}{1+p} \end{array} \right] \text{ V. T. 9, N. 12.}$$

$$1) \int \frac{\operatorname{Tg}^2 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{1-p^2} \left\{ \sqrt{\frac{2-p^2}{2}} - E\left(\frac{\pi}{4}, p\right) \right\} \text{ V. T. 14, N. 9.}$$

$$2) \int \frac{\operatorname{Tg}^2 x dx}{\sqrt{1-p^2 \sin^2 2x}} = \sqrt{1-p^2} - E'(p) + \frac{1}{2} F'(p) \text{ (IV, 128).}$$

$$3) \int \frac{dx}{\cos x \cdot \sqrt{\sin x \cdot (\cos x + p \sin x)}} = \frac{2}{\sqrt{p}} \ell \{ \sqrt{p} + \sqrt{1+p} \} \text{ (VIII, 545).}$$

$$4) \int \frac{dx}{\cos x \cdot \sqrt{\sin x \cdot (\cos x - p \sin x)}} = \frac{2}{\sqrt{p}} \operatorname{Arcsin}(\sqrt{p}) \text{ (VIII, 545).}$$

$$5) \int \frac{\sin^a x}{\cos^{a+1} x} \frac{dx}{\sqrt{\cos x \cdot (\cos x - \sin x)}} = 2 \frac{2^{a/2}}{3^{a/2}} \text{ V. T. 8, N. 1.}$$

$$6) \int \frac{\sin^a x}{\cos^{a+1} x} \frac{dx}{\sqrt{\sin x \cdot (\cos x - \sin x)}} = \pi \frac{1^{a/2}}{2^{a/2}} \text{ V. T. 10, N. 2.}$$

$$7) \int \frac{\sqrt{\cot x - 1}}{\cos x - \sin x} \frac{dx}{\cos x} = 14 \text{ V. T. 38, N. 23.}$$

$$8) \int \frac{1}{q \cos x - p \sin x} \frac{dx}{\sqrt{\sin x \cdot (\cos x - \sin x)}} = \frac{\pi}{\sqrt{q(q-p)}} [p < q] \text{ V. T. 10, N. 9.}$$

$$9) \int \frac{dx}{\cos^2 x \cdot \sqrt{1-p^2 \sin^2 2x}} = \sqrt{1-p^2} + F'(p) - E'(p) \text{ V. T. 39, N. 2 et T. 57, N. 1.}$$

$$10) \int \frac{dx}{\cos x \cdot \sqrt{\cos^2 x + p \sin^2 x}} = \frac{1}{\sqrt{p}} \ell \{ \sqrt{p} + \sqrt{1+p} \} \text{ V. T. 39, N. 3.}$$

$$11) \int \frac{\operatorname{Tg} x}{\sqrt{p \cos^2 x + \sin^2 x}} \frac{dx}{\sqrt{\cos 2x}} = \operatorname{Arccot} p \text{ V. T. 12, N. 6.}$$

$$12) \int \frac{1}{\operatorname{Tg}^2 x + \cot^2 x} \frac{dx}{\sqrt{\cos 2x}} = \frac{1}{8} \pi \text{ V. T. 13, N. 7.}$$

$$13) \int \frac{\cot^2 x}{\operatorname{Tg}^2 x + \cot^2 x} \frac{dx}{\sqrt{\cos 2x}} = \frac{1}{8} \pi + \frac{1}{4} \sqrt{2} \cdot F' \left(\sin \frac{\pi}{4} \right) \text{ V. T. 13, N. 6.}$$

$$14) \int \frac{\sin^{p-\frac{1}{2}} x}{(\cos x - \sin x)^{p+\frac{1}{2}}} \frac{dx}{\cos x} = \pi \operatorname{Sec} p \pi \text{ V. T. 8, N. 12.}$$

$$15) \int \frac{\sin^{p+\frac{1}{2}} x}{(\cos x - \sin x)^{p+\frac{1}{2}}} \frac{dx}{\cos^2 x} = \frac{2p+1}{2} \pi \operatorname{Sec} p \pi \text{ V. T. 8, N. 11.}$$

$$16) \int \frac{1}{(\cot x - 1)^{p+\frac{1}{2}}} \frac{dx}{\sin 2x} = \frac{1}{2} \pi \operatorname{Sec} p \pi \text{ V. T. 8, N. 12.}$$

$$17) \int \frac{\sin^{p-\frac{1}{2}} 2x}{(\cos x - \sin x)^{2p}} \frac{dx}{\cos x} = \frac{2^{1-p}}{1-2^p} \frac{\Gamma(p+\frac{1}{2}) \Gamma(1-p)}{\sqrt{\pi}} [p < \frac{1}{2}] \text{ V. T. 8, N. 10.}$$

$$18) \int \frac{\sin^q x \cdot \cos^{1-\frac{1}{2}q} 2x}{(\cos^2 x - p^2 \sin^2 x)^{\frac{1}{4}q-1}} \frac{dx}{\cos^{\frac{1}{2}} x} = \frac{\Gamma(\frac{q+1}{2}) \Gamma(2-\frac{q}{2})}{p^2 \sqrt{\pi(q-1)(q-3)(q-5)}} \left\{ \frac{1+(q-3)p+p^2}{(1+p)^{q-3}} - \frac{1-(q-3)p+p^2}{(1-p)^{q-3}} \right\} \\ \text{V. T. 7, N. 6.}$$

$$19) \int \frac{\sin^{\frac{1}{2}q} 2x dx}{\{(\cos x - \sin x)(\cos x - p^2 \sin x)\}^{\frac{q-1}{2}} \cos x} = 2^{\frac{1}{2}q-1} \frac{(1-p)^{-q} - (1+p)^{-q}}{pq \sqrt{\pi}} \Gamma\left(\frac{q+2}{2}\right) \Gamma\left(\frac{1-q}{2}\right) \\ \text{V. T. 12, N. 32.}$$

$$1) \int \sin^{2a} x dx = \frac{1^{a+1}}{2^{a+1}} \frac{\pi}{2} \text{ (VIII, 239).}$$

$$2) \int \sin^{2a+1} x dx = \frac{2^{a+1}}{3^{a+1}} \text{ (VIII, 239).}$$

$$3) \int \sin^{p-1} x dx = 2^{p-1} \frac{\{\Gamma(\frac{1}{2}p)\}^2}{\Gamma(p)} \text{ (VIII, 611*)}.$$

$$4) \int \sin 2ax \cdot \sin px dx = (-1)^{a-1} \frac{2a}{4a^2 - p^2} \sin \frac{1}{2} p \pi \text{ (VIII, 332).}$$

$$5) \int \sin 2ax \cdot \cos px dx = \frac{2a}{4a^2 - p^2} \left\{ 1 + (-1)^{a-1} \cos \frac{1}{2} p \pi \right\} \text{ (VIII, 332).}$$

$$6) \int \sin px \cdot \cos 2ax dx = \frac{p}{4a^2 - p^2} \left\{ -1 + (-1)^a \cos \frac{1}{2} p \pi \right\} \text{ (VIII, 332).}$$

$$7) \int \sin px \cdot \sin qx dx = \frac{1}{p^2 - q^2} \left\{ q \sin \frac{1}{2} p \pi \cdot \cos \frac{1}{2} q \pi - p \cos \frac{1}{2} p \pi \cdot \sin \frac{1}{2} q \pi \right\} \text{ (VIII, 331).}$$

$$8) \int \sin px \cdot \cos qx dx = \frac{1}{p^2 - q^2} \left\{ p - p \cos \frac{1}{2} p \pi \cdot \cos \frac{1}{2} q \pi - q \sin \frac{1}{2} p \pi \cdot \sin \frac{1}{2} q \pi \right\} \text{ (VIII, 332).}$$

$$9) \int \sin^{q-1} x \cdot \sin \{(q+1)x\} dx = \frac{1}{q} \sin \frac{1}{2} q \pi \text{ (VIII, 373).}$$

$$10) \int \sin^{q-1} x \cdot \cos \{(q+1)x\} dx = \frac{1}{q} \cos \frac{1}{2} q \pi \text{ (VIII, 373).}$$

$$11) \int \sin^{2a} x \cdot \sin \{(2b+1)x\} dx = \frac{1^{2a+1}}{[2^2 - (2b+1)^2][4^2 - (2b+1)^2] \dots [(2a)^2 - (2b+1)^2]} \frac{1}{2b+1} \text{ (VIII, 243).}$$

$$12) \int \sin^{2a+1} x \cdot \sin \{(2b+1)x\} dx = \frac{(-1)^b \pi}{2^{2a+2}} \binom{2a+1}{a-b} [a > b], = 0 [a < b] \text{ (VIII, 275, 244).}$$

$$13) \int \sin^{2a} x \cdot \sin px dx = \frac{1}{p} \frac{1^{2a+1}}{[2^2 - p^2][4^2 - p^2] \dots [(2a)^2 - p^2]} \left\{ 1 - \cos \frac{1}{2} p \pi \cdot \left(1 - \frac{p^2}{1 \cdot 2} - \frac{p^2[2^2 - p^2]}{1 \cdot 2 \cdot 3 \cdot 4} - \dots \right. \right. \\ \left. \left. \dots - \frac{p^2[2^2 - p^2] \dots [(2a-2)^2 - p^2]}{1^{2a+1}} \right) \right\} \left[\begin{array}{l} \text{Pour } p \text{ entier pair, il} \\ \text{faut que } p > 2a. \end{array} \right] \text{ (VIII, 244).}$$

$$14) \int \sin^{2a+1} x \cdot \sin px dx = p \cos \frac{1}{2} p \pi \frac{1^{2a+1}}{[1^2 - p^2][3^2 - p^2] \dots [(2a+1)^2 - p^2]} \left\{ 1 + \frac{1^2 - p^2}{2 \cdot 3} + \dots \right. \\ \left. \dots + \frac{[1^2 - p^2] \dots [(2a-1)^2 - p^2]}{1^{2a+1}} \right\} \left[\begin{array}{l} \text{Pour } p \text{ entier impair, il} \\ \text{faut que } p > 2a+1. \end{array} \right] \text{ (VIII, 244).}$$

$$15) \int \sin^p x \cdot \sin \{(p+2a)x\} dx = \frac{p+2a}{\cos \{(a-1)\pi\}} \cos \frac{1}{2} p \pi \cdot \sum_0^{a-1} (-1)^n 2^{2n} \frac{(p+a+1)^{n+1} (a-1)^{n+1}}{(p+1)^{2n+1}} \text{ (VIII, 373).}$$

$$16) \int \sin^{2a} x \cdot \cos 2bx dx = \frac{(-1)^b \pi}{2^{2a+1}} \binom{2a}{a-b} [a > b], = 0 [a < b] \text{ (VIII, 275, 243).}$$

$$17) \int \sin^{2a+1} x \cdot \cos 2bx dx = \frac{1^{2a+1/1}}{[1^2 - (2b)^2][3^2 - (2b)^2] \dots [(2a+1)^2 - (2b)^2]} \text{ (VIII, 244).}$$

$$18) \int \sin^{2a} x \cdot \cos px dx = \frac{1}{p} \sin \frac{1}{2} p \pi \frac{1^{2a/1}}{[2^2 - p^2][4^2 - p^2] \dots [(2a)^2 - p^2]} \left\{ 1 - \frac{p^2}{1 \cdot 2} - \frac{p^2[2^2 - p^2]}{1 \cdot 2 \cdot 3 \cdot 4} - \dots \right. \\ \left. \dots - \frac{p^2[2^2 - p^2] \dots [(2a-2)^2 - p^2]}{1^{2a/1}} \right\} \left[\begin{array}{l} \text{Pour } p \text{ entier pair, il} \\ \text{faut que } p > 2a. \end{array} \right] \text{ (VIII, 244).}$$

$$19) \int \sin^{2a+1} x \cdot \cos px dx = \frac{1^{2a+1/1}}{[1^2 - p^2][3^2 - p^2] \dots [(2a+1)^2 - p^2]} \left\{ 1 - p \sin \frac{1}{2} p \pi \cdot \left(1 + \frac{1^2 - p^2}{1 \cdot 2 \cdot 3} + \dots \right. \right. \\ \left. \left. \dots + \frac{[1^2 - p^2] \dots [(2a-1)^2 - p^2]}{1^{2a+1/1}} \right) \right\} \left[\begin{array}{l} \text{Pour } p \text{ entier impair, il} \\ \text{faut que } p > 2a+1. \end{array} \right] \text{ (VIII, 245).}$$

$$20) \int \sin^p x \cdot \cos \{(p+2a)x\} dx = \frac{p+2a}{\cos a \pi} \sin \frac{1}{2} p \pi \cdot \sum_0^{a-1} (-1)^n 2^{2n} \frac{(p+a+1)^{n+1} (a-1)^{n+1}}{(p+1)^{2n+1}} \text{ (VIII, 373).}$$

$$1) \int \cos^{2a} x dx = \frac{\pi}{2} \frac{1^{a/2}}{2^{a/2}} \text{ (VIII, 239).}$$

$$2) \int \cos^{2a+1} x dx = \frac{2^{a/2}}{3^{a/2}} \text{ (VIII, 239).}$$

$$3) \int \cos^p x dx = \frac{\pi}{2^{p+1}} \frac{\Gamma(p+1)}{\{\Gamma(\frac{1}{2}p+1)\}^2} \text{ (VIII, 311).}$$

$$4) \int \cos 2ax \cdot \cos px dx = (-1)^{a-1} \frac{p}{4a^2 - p^2} \sin \frac{1}{2} p \pi \text{ (VIII, 332).}$$

$$5) \int \cos px \cdot \cos qx dx = \frac{1}{p^2 - q^2} \left(p \sin \frac{1}{2} p \pi \cdot \cos \frac{1}{2} q \pi - q \cos \frac{1}{2} p \pi \cdot \sin \frac{1}{2} q \pi \right) \text{ (VIII, 331).}$$

$$6) \int \cos^{q-1} x \cdot \sin \{(q+1)x\} dx = \frac{1}{q} \text{ (VIII, 372).}$$

$$7) \int \cos^{q-1} x \cdot \cos \{(q+1)x\} dx = 0 \text{ (VIII, 371).}$$

$$8) \int \cos^q x \cdot \cos qx dx = \frac{\pi}{2^{q+1}} \text{ (VIII, 321).}$$

$$9) \int \cos^a x \cdot \sin ax dx = \frac{1}{2^{a+1}} \sum_1^a \frac{2^n}{n} \text{ (IV, 101).}$$

$$10) \int \cos^{2a} x \cdot \sin px \, dx = \frac{1}{p} \frac{1^{2a/1}}{[2^2 - p^2][4^2 - p^2] \dots [(2a)^2 - p^2]} \left\{ 1 - \cos \frac{1}{2} p \pi - \frac{p^2}{1 \cdot 2} - \dots \right. \\ \left. \dots - \frac{p^2 [2^2 - p^2] \dots [(2a-2)^2 - p^2]}{1^{2a/1}} \right\} \left[\begin{array}{l} \text{Pour } p \text{ entier pair, il} \\ \text{faut que } p > 2a. \end{array} \right] \text{ (VIII, 245).}$$

$$11) \int \cos^{2a+1} x \cdot \sin px \, dx = p \frac{1^{2a+1/1}}{[1^2 - p^2][3^2 - p^2] \dots [(2a+1)^2 - p^2]} \left\{ \frac{1}{p} \sin \frac{1}{2} p \pi - 1 - \frac{1^2 - p^2}{1 \cdot 2 \cdot 3} - \dots \right. \\ \left. \dots - \frac{[1^2 - p^2] \dots [(2a-1)^2 - p^2]}{1^{2a+1/1}} \right\} \left[\begin{array}{l} \text{Pour } p \text{ entier impair, il} \\ \text{faut que } p > 2a+1. \end{array} \right] \text{ (VIII, 245).}$$

$$12) \int \cos^p x \cdot \sin \{(p+2a)x\} \, dx = (p+2a) \sum_1^a (-1)^{n-1} 2^{2n-2} \frac{(p+a+1)^{n-1/1} (a+1)^{n-1/1}}{(p+1)^{2n/1}} \\ \text{ (VIII, 372).}$$

$$13) \int \cos^{2a} x \cdot \cos 2bx \, dx = \frac{\pi}{2^{2a+1}} \frac{1^{2a/1}}{1^{a+b/1} 1^{a-b/1}} = \frac{\pi}{2^{2a+1}} \binom{2a}{a-b} [a > b] \text{ (VIII, 621, 275).}$$

$$14) \int \cos^{2a+1} x \cdot \cos \{(2b+1)x\} \, dx = \frac{\pi}{2^{2a+1}} \binom{2a+1}{a-b} [a > b] \text{ (VIII, 275).}$$

$$15) \int \cos^{2a} x \cdot \cos px \, dx = \frac{1^{2a/1}}{[2^2 - p^2][4^2 - p^2] \dots [(2a)^2 - p^2]} \frac{1}{p} \sin \frac{1}{2} p \pi \left[\begin{array}{l} \text{Pour } p \text{ entier pair, il} \\ \text{faut que } p > 2a. \end{array} \right] \\ \text{ (VIII, 243).}$$

$$16) \int \cos^{2a+1} x \cdot \cos px \, dx = \frac{1^{2a+1/1}}{[1^2 - p^2][3^2 - p^2] \dots [(2a+1)^2 - p^2]} \cos \frac{1}{2} p \pi \left[\begin{array}{l} \text{Pour } p \text{ entier impair, il} \\ \text{faut que } p > 2a+1. \end{array} \right] \\ \text{ (VIII, 244).}$$

$$17) \int \cos^p x \cdot \cos \{(p+2a)x\} \, dx = 0 \text{ (VIII, 279).}$$

$$18) \int \cos^p x \cdot \cos \{(p-2a)x\} \, dx = \frac{\pi}{2^{p+1}} \frac{(p-a+1)^{a/1}}{1^{a/1}} [p > a-1] \text{ (VIII, 621).}$$

$$19) \int \cos^p x \cdot \cos \{(p+2q)x\} \, dx = \frac{\Gamma(p+1)\Gamma(q)}{2^{p+1}\Gamma(p+q+1)} \sin q \pi \text{ (VIII, 429).}$$

$$20) \int \cos^{p+2a} x \cdot \cos px \, dx = \frac{p^{a/1}}{1^{a/1}} \frac{\pi}{2^{p+2a+1}} \sum_0^\infty \frac{(n+a)^{2n/1-1}}{(p+a-1)^{n/1-1} 1^{n/1}} \text{ (VIII, 306).}$$

$$21) \int \cos^p x \cdot \cos qx \, dx = \frac{\pi}{2^{p+1}} \frac{\Gamma(p+1)}{\Gamma\left(\frac{p+q}{2}+1\right)\Gamma\left(\frac{p-q}{2}+1\right)} \text{ (VIII, 515).}$$

$$1) \int \text{Tang}^{2p-1} x dx = \frac{1}{2} \pi \text{Cosec} p \pi \quad [p < 1] \quad (\text{VIII}, 486).$$

$$2) \int \text{Sin}^{2a} x \cdot \text{Cos}^{2b} x dx = \frac{1^{a/2} 1^{b/2}}{2^{a+b/2}} \frac{\pi}{2} \quad (\text{VIII}, 240).$$

$$3) \int \text{Sin}^{2a} x \cdot \text{Cos}^{2b+1} x dx = \frac{1^{a/2} 2^{b/2}}{3^{a+b/2}} \quad (\text{VIII}, 241).$$

$$4) \int \text{Sin}^{2a+1} x \cdot \text{Cos}^{2b} x dx = \frac{2^{a/2} 1^{b/2}}{3^{a+b/2}} \quad (\text{VIII}, 240).$$

$$5) \int \text{Sin}^{2a+1} x \cdot \text{Cos}^{2b+1} x dx = \frac{1^{a/2} 1^{b/2}}{2 \cdot 1^{a+b+1/2}} \quad (\text{VIII}, 241).$$

$$6) \int \text{Cos}^{2q-2} x \cdot \text{Tang}^{p-1} x dx = \frac{\Gamma(\frac{1}{2}p) \Gamma(q - \frac{1}{2}p)}{2 \Gamma(q)} \quad \text{V. T. 17, N. 19.}$$

$$7) \int \text{Sin} 2ax \cdot \text{Tg}^p x dx = (-1)^{a-1} \frac{\pi}{4 \text{Sin} \frac{1}{2} p \pi} \binom{p}{a} \sum_0^a \binom{a}{n} \frac{p^{n/2}}{(p-a+1)^{n/2}}$$

$$8) \int \text{Cos} 2ax \cdot \text{Tg}^p x dx = (-1)^a \frac{\pi}{4 \text{Cos} \frac{1}{2} p \pi} \binom{p}{a} \sum_0^a \binom{a}{n} \frac{p^{n/2}}{(p-a+1)^{n/2}}$$

$$9) \int \text{Cos}^p x \cdot \text{Sin} p x \cdot \text{Sin} 2ax dx = \frac{\pi}{2^{p+1}} \frac{\Gamma(p+1)}{1^{a/2} \Gamma(p-a+1)} = \quad 10) \int \text{Cos}^p x \cdot \text{Cos} p x \cdot \text{Cos} 2ax dx$$

$$11) \int \text{Cos}^{p+q-2} x \cdot \text{Sin} p x \cdot \text{Sin} q x dx = \frac{\pi}{2^{p+q}} \frac{\Gamma(p+q-1)}{\Gamma(p) \Gamma(q)} = \quad 12) \int \text{Cos}^{p+q-2} x \cdot \text{Cos} p x \cdot \text{Cos} q x dx$$

Sur 7) à 12) voyez Cauchy, Ann. Math. T. 17, 84.

$$13) \int \text{Cos}^{a+p-1} x \cdot \text{Sin} p x \cdot \text{Sin} \{(a+1)x\} dx = \frac{\pi}{2^{p+a+1}} \frac{p^{a/2}}{1^{a/2}} = \quad 14) \int \text{Cos}^{a+p-1} x \cdot \text{Cos} p x \cdot \text{Cos} \{(a+1)x\} dx$$

(VIII, 300).

$$15) \int \text{Cos}^{a+p-1} x \cdot \text{Sin} p x \cdot \text{Cos} \{(a+1)x\} \cdot \text{Sin} x dx = \frac{\pi}{2^{p+a+1}} \frac{p^{a/2}}{1^{a/2}} \quad (\text{VIII}, 307).$$

$$16) \int \text{Cos}^{p+q} x \cdot \text{Sin} p x \cdot \text{Sin} q x dx = \frac{\pi}{2^{p+q+2}} \sum_1^{\infty} \binom{p}{n} \binom{q}{n} \quad (\text{VIII}, 632).$$

$$17) \int \text{Cos}^{p+q} x \cdot \text{Cos} p x \cdot \text{Cos} q x dx = \frac{\pi}{2^{p+q+2}} \left\{ 2 + \sum_1^{\infty} \binom{p}{n} \binom{q}{n} \right\} \quad (\text{VIII}, 632).$$

$$18) \int \text{Cos}^a x \cdot \text{Sin} p x \cdot \text{Sin} x dx = \frac{p \pi}{2^{a+2}} \frac{1^{a/2}}{\Gamma\left(\frac{a+p+3}{2}\right) \Gamma\left(\frac{a-p+3}{2}\right)} \quad (\text{IV}, 105).$$

$$19) \int \cos^a x \cdot \sin a x \cdot \sin 2 b x dx = \frac{\pi}{2^{a+1}} \binom{a}{b} = \quad 20) \int \cos^a x \cdot \cos a x \cdot \cos 2 b x dx \text{ (VIII, 275).}$$

$$21) \int \cos^{a-1} x \cdot \cos \{(a+1)x\} \cdot \cos 2 b x dx = \frac{\pi}{2^{a+1}} \frac{(a-b+1)^{b-1/1}}{1^{b-1/1}} \text{ (IV, 105).}$$

$$22) \int \cos^{p+1} x \cdot \sin p x \cdot \operatorname{Tg} x dx = \frac{\Gamma(a+p)}{1^{a/1} \Gamma(p)} \frac{\pi}{2^{p+1} a+1} \sum_0^{\infty} \binom{a}{n} \frac{a^{n/1-1}}{(p+a-1)^{n/1-1}} \text{ (VIII, 306*)}.$$

$$23) \int \sin^{p-1} x \cdot \cos^{q-1} x \cdot \sin \{(p+q)x\} dx = \frac{\Gamma(p) \Gamma(q)}{\Gamma(p+q)} \sin \frac{1}{2} p \pi \text{ (VIII, 430).}$$

$$24) \int \sin^{p-1} x \cdot \cos^{q-1} x \cdot \cos \{(p+q)x\} dx = \frac{\Gamma(p) \Gamma(q)}{\Gamma(p+q)} \cos \frac{1}{2} p \pi \text{ (VIII, 430).}$$

$$1) \int \sin(p \operatorname{Tg} x) dx = \frac{1}{2} \{e^{-p} \operatorname{Ei}(p) - e^p \operatorname{Ei}(-p)\} \text{ V. T. 160, N. 3.}$$

$$2) \int \cos(p \operatorname{Tg} x) dx = \frac{1}{2} \pi e^{-p} \text{ (VIII, 546).}$$

$$3) \int \sin^2(p \operatorname{Tg} x) dx = \frac{1}{4} \pi (1 - e^{-1} p) \text{ V. T. 160, N. 10.}$$

$$4) \int \cos^2(p \operatorname{Tg} x) dx = \frac{1}{4} \pi (1 + e^{-1} p) \text{ V. T. 160, N. 11.}$$

$$5) \int \sin(p \operatorname{Tg} x) \cdot \operatorname{Tg} x dx = \frac{1}{2} \pi e^{-p} \text{ (VIII, 546).}$$

$$6) \int \cos(p \operatorname{Tg} x) \cdot \operatorname{Tg} x dx = -\frac{1}{2} \{e^{-p} \operatorname{Ei}(p) + e^p \operatorname{Ei}(-p)\} \text{ V. T. 160, N. 6.}$$

$$7) \int \sin(p \operatorname{Tg} x) \cdot \sin 2 x dx = \frac{1}{2} p \pi e^{-p} \text{ (VIII, 546).}$$

$$8) \int \cos(p \operatorname{Tg} x) \cdot \sin^2 x dx = \frac{1-p}{4} \pi e^{-p} \text{ (VIII, 546).}$$

$$9) \int \cos(p \operatorname{Tg} x) \cdot \cos^2 x dx = \frac{1+p}{4} \pi e^{-p} \text{ (VIII, 546).}$$

$$10) \int \cos(p \operatorname{Tg} x) \cdot \cos 2 x dx = \frac{1}{2} p \pi e^{-p} \text{ V. T. 43, N. 8, 9.}$$

$$11) \int \sin(p \operatorname{Tg} x) \cdot \sin^2 x \cdot \operatorname{Tg} x dx = \frac{2-p}{4} \pi e^{-p} \text{ (VIII, 546)}.$$

$$12) \int \cos^{q-1} x \cdot \sin\{(q+1)x\} \cdot \sin(p \operatorname{Tg} x) dx = \frac{\pi}{2 \Gamma(q+1)} p^q e^{-q} = 13) \int \cos^{q-1} x \cdot \cos\{(q+1)x\} \cdot \cos(p \operatorname{Tg} x) dx \text{ Sur 12) et 13) voyez Cauchy, Ann. Math. T. 17, 84.}$$

$$14) \int \sin(p \sin x) \cdot \sin 2x dx = \frac{2}{q^2} (\sin q - q \cos q) = 15) \int \sin(p \cos x) \cdot \sin 2x dx \text{ V. T. 149, N. 1.}$$

$$16) \int \cos(p \cos x) \cdot \cos 2qx dx = \frac{1}{2q} \sin q \pi \cdot \left\{ 1 + \sum_1^{\infty} \frac{(-1)^n}{[1^2 - q^2][2^2 - q^2] \dots [n^2 - q^2]} \left(\frac{p}{2}\right)^{2n} \right\} \text{ (IV, 107).}$$

$$17) \int \sin(p \cos x) \cdot \operatorname{Tg} x dx = \operatorname{Si}(p) \text{ V. T. 149, N. 5.}$$

$$18) \int \sin(p \operatorname{Cot} x) \cdot \operatorname{Tg} x dx = \frac{\pi}{2} (1 - e^{-p}) \text{ (VIII, 546*)}.$$

$$19) \int \sin^2(p \operatorname{Cot} x) \cdot \operatorname{Tg}^2 x dx = \frac{\pi}{4} (e^{-2p} + 2p - 1) \text{ V. T. 172, N. 13.}$$

$$20) \int [\cos(q \operatorname{Cot} x) - \cos(p \operatorname{Cot} x)] \operatorname{Tg}^2 x dx = \frac{\pi}{2} (e^{-p} - e^{-q}) + \frac{p-q}{2} \pi \text{ V. T. 173, N. 20.}$$

$$1) \int \cos(2x - 2 \operatorname{Tg} x) dx = \frac{2\pi}{e^2} \text{ V. T. 170, N. 12.}$$

$$2) \int \cos^{p-1} x \cdot \cos\{q \operatorname{Tg} x - (p+1)x\} dx = \frac{\pi}{\Gamma(p+1)} q^p e^{-q} \text{ V. T. 43, N. 12, 13.}$$

$$3) \int \cos^{p-1} x \cdot \cos\{q \operatorname{Tg} x + (p+1)x\} dx = 0 \text{ V. T. 43, N. 12, 13.}$$

$$4) \int \cos^{p-1} x \cdot \cos\{q \operatorname{Tg} x + (p-1)x\} dx = \frac{\pi}{2^p} e^{-q} \text{ (IV, 108).}$$

$$5) \int \sin\left(\frac{1}{2} r \pi - p \operatorname{Tg} x\right) \cdot \operatorname{Tg}^{r-1} x dx = \frac{1}{2} \pi e^{-p} = 6) \int \cos\left(\frac{1}{2} r \pi - p \operatorname{Tg} x\right) \cdot \operatorname{Tg}^r x dx \text{ V. T. 160, N. 20, 21.}$$

$$7) \int \sin^{p-1} x \cdot \cos^{q-1} x \cdot \sin\{c \operatorname{Tg} x + (p+q)x - \frac{1}{2} p \pi\} dx = 0 \text{ (IV, 109).}$$

$$1) \int \cos^{a+p} x \cdot \sin \{(a+p+1)x\} \frac{dx}{\sin x} = \frac{\pi}{2} \frac{p^{a/1}}{1^{a/1}} \text{ V. T. 45, N. 3, 4.}$$

$$2) \int \cos^{a+p} x \cdot \sin \{(a-p+1)x\} \frac{dx}{\sin x} = \frac{\pi}{2 \cdot 1^{a/1}} \left[\frac{1}{2^{p+a-1}} \sum_0^a \binom{a}{n} 2^{n/2} p^{a-n/1} - p^{a/1} \right] \text{ V. T. 45, N. 3, 4.}$$

$$3) \int \cos^{a+p} x \cdot \sin px \cdot \cos \{(a+1)x\} \frac{dx}{\sin x} = \frac{\pi}{2 \cdot 1^{a/1}} \left[p^{a/1} - \frac{1}{2^{p+a}} \sum_0^a \binom{a}{n} 2^{n/2} p^{a-n/1} \right] \text{ (VIII, 307).}$$

$$4) \int \cos^{a+p} x \cdot \cos px \cdot \sin \{(a+1)x\} \frac{dx}{\sin x} = \frac{\pi}{2^{p+a+1} 1^{a/1}} \sum_0^a \binom{a}{n} 2^{n/2} p^{a-n/1} \text{ (VIII, 307).}$$

$$5) \int \sin px \cdot \cos^{p-1} x \frac{dx}{\sin x} = \frac{1}{2} \pi \text{ (VIII, 306).} \quad 6) \int \cos px \cdot \cos^{p-1} x \frac{dx}{\sin x} = \infty \text{ (VIII, 618).}$$

$$7) \int \cos \left\{ p \left(\frac{1}{2} \pi - x \right) \right\} \frac{dx}{\sin^2 x} = 2^{p-1} \pi =$$

$$8) \int \cos px \frac{dx}{\cos^2 x}$$

$$9) \int \sin 2ax \cdot \sin px \frac{dx}{\cos^p x} = (-1)^a 2^{p-2} \pi \frac{p^{a/1}}{1^{a/1}} =$$

$$10) \int \cos 2ax \cdot \cos px \frac{dx}{\cos^p x}$$

$$11) \int \sin^{p+q-2} x \cdot \sin qx \frac{dx}{\sin^p x} = \frac{\pi}{2 \sin \frac{1}{2} p \pi} \frac{\Gamma(p+q-1)}{\Gamma(p) \Gamma(q)}$$

$$12) \int \cos^{p+q-2} x \cdot \cos qx \frac{dx}{\sin^p x} = \frac{\pi}{2 \cos \frac{1}{2} p \pi} \frac{\Gamma(p+q-1)}{\Gamma(p) \Gamma(q)}$$

Sur 7) à 12) voyez Cauchy, Ann. Math. T. 17, 84.

$$13) \int \sin^{2p-2} x \frac{dx}{\cos^{2p-1} x} = \frac{\Gamma(2p-1) \Gamma(1-p)}{2^{2p-1} \Gamma(p)} = \quad 14) \int \cos^{2p-2} x \frac{dx}{\sin^{2p-1} x} \text{ V. T. 3, N. 12.}$$

$$15) \int \sin \{(2-p)x\} \frac{dx}{\sin^p x} = \frac{1}{1-p} \cos \frac{1}{2} p \pi \quad [2 > p > 0] \text{ (VIII, 306).}$$

$$16) \int \cos \{(2-p)x\} \frac{dx}{\sin^p x} = \frac{1}{1-p} \sin \frac{1}{2} p \pi \quad [p^2 < 1] \text{ (VIII, 306).}$$

$$17) \int \sin qx \cdot \cot x dx = \frac{1}{8} \pi q^2 \text{ V. T. 305, N. 6.}$$

$$18) \int \cos^{a-1} x \cdot \sin \{(a+1)x\} \frac{dx}{Tg x} = \frac{1}{2} \pi \text{ V. T. 45, N. 1.}$$

$$19) \int \cot^p x dx = \frac{1}{2} \pi \sec \frac{1}{2} p \pi \quad [p < 1] \text{ (VIII, 306).}$$

$$20) \int \sin 2x \cdot \cot^p x dx = \frac{1}{2} p \pi \operatorname{Cosec} \frac{1}{2} p \pi \quad [0 < p < 2] \text{ (VIII, 306).}$$

$$21) \int \cos 2x \cdot \cot^p x dx = \frac{1}{2} p \pi \sec \frac{1}{2} p \pi \quad [p^2 < 1] \text{ (VIII, 305).}$$

$$22) \int \sin^{2q-2} x \cdot \cot^{p-1} x dx = \frac{\Gamma(\frac{1}{2}p) \Gamma(q - \frac{1}{2}p)}{2 \Gamma(q)} \text{ V. T. 17, N. 19.}$$

$$23) \int \cos^{p-2} x \cdot \sin^q x \cdot \cot^q x dx = \frac{\Gamma(p+q-1)}{2 \Gamma(p) \Gamma(q)} \pi \operatorname{Cosec} \frac{1}{2} q \pi \quad [2 > q > 0] \text{ (VIII, 305).}$$

$$24) \int \cos^{p-2} x \cdot \cos^q x \cdot \cot^q x dx = \frac{\Gamma(p+q-1)}{2 \Gamma(p) \Gamma(q)} \pi \sec \frac{1}{2} q \pi \quad [1 > q > 0] \text{ (VIII, 305).}$$

$$25) \int \frac{\sin^2 x dx}{\cos 2x} = -\frac{1}{4} \pi \text{ (VIII, 531*)}.$$

$$26) \int \frac{\cos^2 x dx}{\cos 2x} = \frac{1}{4} \pi \text{ (VIII, 531*)}.$$

$$27) \int \frac{\operatorname{Tg}^{p-1} x dx}{\cos 2x} = \frac{1}{2} \pi \cot \frac{1}{2} p \pi \text{ V. T. 17, N. 11.}$$

$$28) \int \frac{\cos^2 x dx}{\cos^2 2x} = 0 \text{ V. T. 17, N. 17.}$$

$$29) \int \frac{dx}{\cos 2x \cdot \operatorname{Tg}^{p-1} x} = -\frac{1}{2} \pi \cot \frac{1}{2} p \pi \text{ V. T. 17, N. 11.}$$

$$1) \int (\sin^p x - \operatorname{Cosec}^p x) \frac{dx}{\cos x} = -\frac{1}{2} \pi \operatorname{Tg} \frac{1}{2} p \pi \text{ V. T. 4, N. 11.}$$

$$2) \int (\sin^p x - \sin^q x) \frac{dx}{\cos x} = \frac{1}{2} \left\{ Z' \left(\frac{q+1}{2} \right) - Z' \left(\frac{p+1}{2} \right) \right\} \text{ V. T. 2, N. 9.}$$

$$3) \int (\cos^p x - \sec^p x) \frac{dx}{\sin x} = -\frac{1}{2} \pi \operatorname{Tg} \frac{1}{2} p \pi \text{ V. T. 4, N. 11.}$$

$$4) \int (\sec x - 1)^p \operatorname{Tg} x dx = -\pi \operatorname{Cosec} p \pi \text{ V. T. 3, N. 5.}$$

$$5) \int (\sec x - 1)^{1-p} \sin 2x dx = (1-p) p \pi \operatorname{Cosec} p \pi \text{ V. T. 1, N. 3.}$$

$$6) \int (\operatorname{Cosec} x - 1)^p \frac{dx}{\operatorname{Tg} x} = -\pi \operatorname{Cosec} p \pi \text{ V. T. 3, N. 5.}$$

$$7) \int (\sin^{p-1} x + \sin^{q-1} x) \frac{dx}{\cos^{p+q-1} x} = \frac{1}{2} \cos \left(\frac{q-p}{4} \pi \right) \cdot \sec \left(\frac{q+p}{4} \pi \right) \frac{\Gamma(\frac{1}{2}p) \Gamma(\frac{1}{2}q)}{\Gamma(\frac{p+q}{2})} \text{ V. T. 8, N. 25.}$$

$$8) \int (\sin^{p-1} x - \sin^{q-1} x) \frac{dx}{\cos^{p+q-1} x} = \frac{1}{2} \sin \left(\frac{q-p}{4} \pi \right) \cdot \operatorname{Cosec} \left(\frac{q+p}{4} \pi \right) \frac{\Gamma(\frac{1}{2}p) \Gamma(\frac{1}{2}q)}{\Gamma(\frac{p+q}{2})} \text{ V. T. 8, N. 26.}$$

$$1) \int \frac{\sin x dx}{\sin x \pm q \cos x} = \frac{q}{1+q^2} \left(\frac{\pi}{2q} \pm lq \right) \text{ (VIII, 544).}$$

$$2) \int \frac{\cos x dx}{\sin x \pm q \cos x} = \frac{1}{1+q^2} \left(\pm \frac{1}{2} q \pi - lq \right) \text{ (VIII, 544).}$$

$$3) \int \frac{dx}{p+q \cos x} = \frac{1}{\sqrt{p^2-q^2}} \operatorname{Arccos} \frac{q}{p} [q^2 < p^2], = \frac{1}{\sqrt{q^2-p^2}} l \frac{q + \sqrt{q^2-p^2}}{p} [q^2 > p^2], = \frac{1}{p} [q=p], = \\ = \infty [q=-p] \text{ (VIII, 205).}$$

$$4) \int \frac{Tg^p x dx}{1 + \sin 2x \cos \lambda} = \pi \operatorname{Cosec} \lambda \cdot \operatorname{Cosec} p \pi \cdot \sin p \lambda \left[\frac{p^2}{\lambda^2} \leq \frac{1}{\pi^2} \right] \text{ V. T. 20, N. 3.}$$

$$5) \int \frac{q \sin x - \cos x}{\sin x + q \cos x} dx = lq \text{ (IV, 113).}$$

$$6) \int \frac{dx}{p^2 \pm q^2 \sin^2 x} = \frac{\pi}{2p \sqrt{p^2 \pm q^2}} =$$

$$7) \int \frac{dx}{p^2 \pm q^2 \cos^2 x} \text{ (VIII, 305).}$$

$$8) \int \frac{\sin x dx}{1 - \cos^2 \lambda \cdot \sin^2 x} = (\pi - 2\lambda) \operatorname{Cosec} 2\lambda \text{ (VIII, 543*)}. \quad 9) \int \frac{\sin^4 x dx}{1 + p \sin^2 x} = \frac{\pi}{2p^2 \sqrt{1+p}} + \frac{p-2}{4p^2} \pi \text{ (VIII, 338).}$$

$$10) \int \frac{\cos^{2n} x dx}{q^2 - \cos^2 x} = \frac{\pi}{q^2} \sum_0^{\infty} \frac{3^{n+n/2}}{2^{n+n/2}} \frac{1}{q^{2n}} \text{ (VIII, 419).}$$

$$11) \int \frac{\cos^{2n+1} x dx}{q^2 - \cos^2 x} = \frac{1}{q^2} \sum_0^{\infty} \frac{2^{n+n/2}}{3^{n+n/2}} \frac{1}{q^{2n}} \text{ (VIII, 420).}$$

$$12) \int \frac{\cos x dx}{\sin^2 \lambda + \cos^2 \lambda \cdot \cos^2 x} = -\operatorname{Sec} \lambda \cdot l Tg \frac{1}{2} \lambda \text{ (VIII, 323).}$$

$$13) \int \frac{dx}{p^2 \sin^2 x + q^2 \cos^2 x} = \frac{\pi}{2pq} \text{ (VIII, 305).}$$

$$14) \int \frac{\sin^2 x dx}{p^2 \sin^2 x + q^2 \cos^2 x} = \frac{\pi}{2p(p+q)} \text{ (VIII, 305).}$$

$$15) \int \frac{\cos^2 x dx}{p^2 \sin^2 x + q^2 \cos^2 x} = \frac{\pi}{2q(p+q)} \text{ (VIII, 305).}$$

$$16) \int \frac{\cos 2x dx}{p^2 \sin^2 x + q^2 \cos^2 x} = \frac{\pi}{2pq} \frac{p-q}{p+q} \text{ (VIII, 305).}$$

$$17) \int \frac{\sin 2x dx}{p^2 \sin^2 x + q^2 \cos^2 x} = \frac{2}{p^2 - q^2} l \frac{p}{q} \text{ (VIII, 546).}$$

$$18) \int \frac{Tang 2x dx}{p^2 \sin^2 x + q^2 \cos^2 x} = \frac{2}{p^2 + q^2} \log \frac{p}{q} \text{ (VIII, 531).}$$

$$19) \int \frac{Tang^r x dx}{p^2 \sin^2 x + q^2 \cos^2 x} = \frac{1}{2} \pi q^{r-1} p^{-r-1} \sec \frac{1}{2} r \pi \text{ V. T. 17, N. 10.}$$

$$20) \int \frac{\cos^r x \cdot \cos r x dx}{p^2 \sin^2 x + q^2 \cos^2 x} = \frac{\pi}{2q} \frac{p^{r-1}}{(p+q)^r} \text{ (VIII, 611*)}. \quad \text{V. T. 17, N. 10.}$$

$$21) \int \frac{Tg^p x dx}{1 - \cos^2 \lambda \cdot \sin^2 2x} = \frac{1}{2} \pi \sec \frac{1}{2} p \pi \cdot \operatorname{Cosec} \lambda \cdot \cos \left\{ p \left(\frac{1}{2} \pi - \lambda \right) \right\} \text{ V. T. 47, N. 4.}$$

$$22) \int \frac{\sin 2x \cdot Tg^p x dx}{1 - \cos^2 \lambda \cdot \sin^2 2x} = \pi \operatorname{Cosec} \frac{1}{2} p \pi \cdot \operatorname{Cosec} 2\lambda \cdot \sin \left\{ p \left(\frac{1}{2} \pi - \lambda \right) \right\} \text{ V. T. 47, N. 4.}$$

$$23) \int \frac{\sin^2 x \cdot Tg^p x dx}{1 - \cos^2 \lambda \cdot \sin^2 2x} = \frac{1}{2} \pi \sec \frac{1}{2} p \pi \cdot \operatorname{Cosec} 2\lambda \cdot \cos \left\{ \frac{1}{2} p \pi - (p+1)\lambda \right\} \text{ V. T. 47, N. 4.}$$

$$24) \int \frac{\cos^2 x \cdot Tg^p x dx}{1 - \cos^2 \lambda \cdot \sin^2 2x} = \frac{1}{2} \pi \sec \frac{1}{2} p \pi \cdot \operatorname{Cosec} 2\lambda \cdot \cos \left\{ \frac{1}{2} p \pi - (p-1)\lambda \right\} \text{ V. T. 47, N. 4.}$$

$$25) \int \frac{\cos 2x \cdot Tg^p x dx}{1 - \cos^2 \lambda \cdot \sin^2 2x} = -\frac{1}{2} \pi \sec \frac{1}{2} p \pi \cdot \sec \lambda \cdot \sin \left\{ p \left(\frac{1}{2} \pi - \lambda \right) \right\} \text{ V. T. 47, N. 23, 24.}$$

Dans 21) à 25) on a $\lambda^2 < \pi^2$, $p^2 < 1$.

$$26) \int \frac{\cos^2 x \cdot Tg^{p-1} x dx}{1 - 3 \sin^2 x \cdot \cos^2 x} = \frac{\pi}{\sqrt{3}} \operatorname{Cosec} \frac{1}{2} p \pi \cdot \sin \left\{ \frac{2-p}{6} \pi \right\} [4 > p] \text{ (IV, 114).}$$

$$27) \int \frac{\cos 2ax dx}{1 - p^2 \sin^2 x} = \frac{(-1)^a \pi}{2 \sqrt{1-p^2}} \left\{ \frac{1 - \sqrt{1-p^2}}{p} \right\}^{2a} \text{ (IV, 136*)}. \quad \text{V. T. 2, N. 12.}$$

$$28) \int \frac{Tg x dx}{\cos^p x + \sec^p x} = \frac{\pi}{4p} \text{ V. T. 2, N. 12.}$$

$$29) \int \frac{\cos^p x + \cos^q x}{\cos^{p+q} x + 1} Tg x dx = \frac{\pi}{p+q} \sec \left(\frac{q-p}{q+p} \frac{\pi}{2} \right) \text{ V. T. 2, N. 18.}$$

$$30) \int \frac{\cos^p x - \cos^q x}{\cos^{p+q} x - 1} Tg x dx = \frac{\pi}{p+q} Tg \left(\frac{q-p}{q+p} \frac{\pi}{2} \right) \text{ V. T. 2, N. 19.}$$

$$1) \int \frac{dx}{(q \sin x + r \cos x)^2} = \frac{1}{qr} \text{ (VIII, 209).} \quad 2) \int \frac{q \cos x - r \sin x}{(q \sin x + r \cos x)^2} dx = \frac{q-r}{qr} \text{ (VIII, 209).}$$

$$3) \int \frac{\cos^2 x \cdot Tg^{p+1} x dx}{(1 + \cos \lambda \cdot \sin 2x)^2} = \frac{\pi}{2 \sin p \pi \cdot \sin^2 \lambda} (p \sin \lambda \cdot \cos p \lambda - \cos \lambda \cdot \sin p \lambda) \text{ V. T. 20, N. 8.}$$

$$4) \int \frac{dx}{(Tg x + Cot x)^2} = \frac{\pi}{16} \text{ V. T. 17, N. 16.}$$

$$5) \int \frac{Sin^{1-p} x \cdot Cos^p x dx}{(Sin x + Cos x)^2} = \frac{1-p}{2} p \pi Cosec p \pi \text{ V. T. 16, N. 5.}$$

$$6) \int \frac{Tg x dx}{(Sec x - 1)^p} = \pi Cosec p \pi \text{ V. T. 3, N. 5.}$$

$$7) \int \frac{Sin 2 x dx}{(Cosec x - 1)^p} = (1+p) p \pi Cosec p \pi \text{ V. T. 3, N. 6.}$$

$$8) \int \frac{Sin^{p-1} x \cdot Cos^{q-1} x dx}{(Sin x + Cos x)^{p+q}} = \frac{\Gamma(p) \Gamma(q)}{\Gamma(p+q)} \text{ V. T. 16, N. 7.}$$

$$9) \int \left[\left(r - i Tg \frac{x}{s} \right)^{-a} + \left(r + i Tg \frac{x}{s} \right)^{-a} \right] dx = \frac{\pi}{(r+s)^a} \text{ V. T. 19, N. 18.}$$

$$10) \int \left[\left(r - i Tg \frac{x}{s} \right)^{-a} - \left(r + i Tg \frac{x}{s} \right)^{-a} \right] Tg \frac{x}{s} dx = \frac{\pi s i}{(r+s)^a} \text{ V. T. 19, N. 19.}$$

$$11) \int \frac{Sin 2 x \cdot Cos x dx}{(1 - Cos^2 \lambda \cdot Sin^2 x)^2} = \frac{\pi - 2\lambda - Sin 2\lambda}{Sin 2\lambda \cdot Cos^2 \lambda} \text{ V. T. 47, N. 8.}$$

$$12) \int \frac{(Tg x - Cot x)^{2q}}{(Tg^2 x + Cot^2 x)^{p+\frac{1}{2}}} Cosec^2 2x dx = 2^{q-p-2} Cos^2 q \pi \frac{\Gamma(q+\frac{1}{2}) \Gamma(p-q)}{\Gamma(p+\frac{1}{2})} \text{ V. T. 21, N. 15.}$$

$$13) \int \frac{dx}{(p^2 Sin^2 x + q^2 Cos^2 x)^2} = \frac{\pi}{4} \frac{p^2 + q^2}{p^3 q^3} \text{ (VIII, 338).}$$

$$14) \int \frac{Sin^2 x dx}{(p^2 Sin^2 x + q^2 Cos^2 x)^2} = \frac{\pi}{4 p^3 q} \text{ (VIII, 565).}$$

$$15) \int \frac{Cos^2 x dx}{(p^2 Sin^2 x + q^2 Cos^2 x)^2} = \frac{\pi}{4 p q^3} \text{ (VIII, 338).}$$

$$16) \int \frac{Cos 2 x dx}{(p^2 Sin^2 x + q^2 Cos^2 x)^2} = \frac{\pi}{4} \frac{p^2 - q^2}{p^3 q^3} \text{ (VIII, 338).}$$

$$17) \int \frac{dx}{(p^2 Sin^2 x + q^2 Cos^2 x)^2} = \frac{\pi}{16} \frac{3p^4 + 2p^2 q^2 + 3q^4}{p^5 q^5} \text{ (VIII, 566).}$$

$$18) \int \frac{Sin^2 x dx}{(p^2 Sin^2 x + q^2 Cos^2 x)^2} = \frac{\pi}{16} \frac{p^4 + 3q^4}{p^5 q^5} \text{ (VIII, 566).}$$

$$19) \int \frac{Cos^2 x dx}{(p^2 Sin^2 x + q^2 Cos^2 x)^2} = \frac{\pi}{16} \frac{3p^4 + q^4}{p^5 q^5} \text{ (VIII, 566).}$$

$$20) \int \frac{Cos 2 x dx}{(p^2 Sin^2 x + q^2 Cos^2 x)^2} = \frac{3\pi}{16} \frac{p^4 - q^4}{p^5 q^5} \text{ V. T. 48, N. 18, 19.}$$

$$21) \int \frac{dx}{(p^2 \sin^2 x + q^2 \cos^2 x)^4} = \frac{\pi}{32} \frac{5p^6 + 3p^4 q^2 + 3p^2 q^4 + 5q^6}{p^7 q^7} \text{ (VIII, 566).}$$

$$22) \int \frac{\sin^2 x dx}{(p^2 \sin^2 x + q^2 \cos^2 x)^4} = \frac{\pi}{32} \frac{p^4 + 2p^2 q^2 + 5q^4}{p^7 q^5} \text{ (VIII, 566).}$$

$$23) \int \frac{\cos^2 x dx}{(p^2 \sin^2 x + q^2 \cos^2 x)^4} = \frac{\pi}{32} \frac{5p^4 + 2p^2 q^2 + q^4}{p^5 q^7} \text{ (VIII, 566).}$$

$$24) \int \frac{\sin^4 x dx}{(p^2 \sin^2 x + q^2 \cos^2 x)^4} = \frac{\pi}{32} \frac{p^2 + 5q^2}{p^7 q^3} \text{ (VIII, 566).}$$

$$25) \int \frac{\cos^4 x dx}{(p^2 \sin^2 x + q^2 \cos^2 x)^4} = \frac{\pi}{32} \frac{5p^2 + q^2}{p^3 q^7} \text{ (VIII, 566).}$$

$$26) \int \frac{\sin^2 x \cdot \cos^2 x dx}{(p^2 \sin^2 x + q^2 \cos^2 x)^4} = \frac{\pi}{32} \frac{p^2 + q^2}{p^5 q^5} \text{ (VIII, 566).}$$

$$27) \int \frac{\cos 2x dx}{(p^2 \sin^2 x + q^2 \cos^2 x)^4} = \frac{\pi}{32} \frac{5p^6 + p^4 q^2 - p^2 q^4 - 5q^6}{p^7 q^7} \text{ V. T. 48, N. 22, 23.}$$

$$28) \int \frac{\sin^{2r-1} x \cdot \cos^{2s-1} x dx}{(p^2 \sin^2 x + q^2 \cos^2 x)^{r+s}} = \frac{\Gamma(r) \Gamma(s)}{\Gamma(r+s)} \frac{1}{2p^{2r} q^{2s}} \text{ V. T. 17, N. 19.}$$

$$1) \int \frac{Tg^p x}{\sin x + \cos x} \frac{dx}{\sin x} = \pi \operatorname{Cosec} p\pi \text{ V. T. 18, N. 1.}$$

$$2) \int \frac{Tg^p x}{\sin x - \cos x} \frac{dx}{\sin x} = -\pi \operatorname{Cot} p\pi \text{ V. T. 18, N. 2.}$$

$$3) \int \frac{1}{1 + \cos \lambda \cdot \sin 2x} \frac{dx}{Tg^p x} = \frac{\pi}{\sin p\pi} \frac{\sin p\lambda}{\sin \lambda} \left[\begin{matrix} p^2 \leq 1, \\ \lambda^2 \leq \pi^2 \end{matrix} \right] \text{ V. T. 20, N. 3.}$$

$$4) \int \frac{\sin^2 x}{p^2 \sin^2 x + q^2 \cos^2 x} \frac{dx}{\cos 2x} = \frac{-1}{2p} \frac{q\pi}{p^2 + q^2} \text{ (VIII, 531).}$$

$$5) \int \frac{\cos^2 x}{p^2 \sin^2 x + q^2 \cos^2 x} \frac{dx}{\cos 2x} = \frac{p}{2q} \frac{\pi}{p^2 + q^2} \text{ (VIII, 531).}$$

$$6) \int \frac{1}{1 - q \cos^2 x} \frac{dx}{Tg^p x} = \frac{1}{\sqrt{1 - q^{p+1}}} \frac{\pi}{2} \operatorname{Sec} \frac{1}{2} p\pi \left[\begin{matrix} p^2 \leq 1, \\ q \leq 1 \end{matrix} \right] \text{ (VIII, 558).}$$

$$7) \int \frac{1}{1 - \cos^2 \lambda \cdot \sin^2 2x} \frac{dx}{Tg^p x} = \frac{\pi}{2 \cos \frac{1}{2} p\pi} \frac{\cos \{p(\frac{1}{2}\pi - \lambda)\}}{\sin \lambda} \text{ V. T. 49, N. 3.}$$

$$8) \int \frac{\sin 2x}{1 - \cos^2 \lambda \cdot \sin^2 2x} \frac{dx}{\operatorname{Tg}^p x} = \frac{\pi}{\sin \frac{1}{2} p \pi} \frac{\sin \{p(\frac{1}{2} \pi - \lambda)\}}{\sin 2\lambda} \quad \text{V. T. 49, N. 3.}$$

$$9) \int \frac{\sin^2 x}{1 - \cos^2 \lambda \cdot \sin^2 2x} \frac{dx}{\operatorname{Tg}^p x} = \frac{\pi}{2 \cos \frac{1}{2} p \pi} \frac{\cos \{\frac{1}{2} p \pi - (p-1)\lambda\}}{\sin 2\lambda} \quad \text{V. T. 49, N. 3.}$$

$$10) \int \frac{\cos^2 x}{1 - \cos^2 \lambda \cdot \sin^2 2x} \frac{dx}{\operatorname{Tg}^p x} = \frac{\pi}{2 \cos \frac{1}{2} p \pi} \frac{\cos \{\frac{1}{2} p \pi - (p+1)\lambda\}}{\sin 2\lambda} \quad \text{V. T. 49, N. 3.}$$

$$11) \int \frac{\cos 2x}{1 - \cos^2 \lambda \cdot \sin^2 2x} \frac{dx}{\operatorname{Tg}^p x} = \frac{\pi}{2 \cos \frac{1}{2} p \pi} \frac{\sin \{p(\frac{1}{2} \pi - \lambda)\}}{\cos \lambda} \quad \text{V. T. 49, N. 9, 10.}$$

Dans 7) à 11) on a $\lambda^2 < \pi^2$, $p^2 < 1$.

$$12) \int \frac{\cos^p x + \sec^p x}{\cos^q x + \sec^q x} \operatorname{Tg} x dx = \frac{\pi}{2q} \sec \frac{p\pi}{2q} \quad \text{V. T. 4, N. 14.}$$

$$13) \int \frac{\cos^p x - \sec^p x}{\cos^q x - \sec^q x} \operatorname{Tg} x dx = \frac{\pi}{2q} \operatorname{Tg} \frac{p\pi}{2q} \quad \text{V. T. 4, N. 15.}$$

$$14) \int \frac{1}{\sin^p x + \operatorname{Cosec}^p x} \frac{dx}{\operatorname{Tg} x} = \frac{\pi}{4p} \quad \text{V. T. 2, N. 12.}$$

$$15) \int \frac{\sin^p x + \sin^q x}{\sin^{p+q} x + 1} \frac{dx}{\operatorname{Tg} x} = \frac{\pi}{p+q} \sec \left(\frac{p-q}{p+q} \frac{\pi}{2} \right) \quad \text{V. T. 2, N. 18.}$$

$$16) \int \frac{\sin^p x - \sin^q x}{\sin^{p+q} x - 1} \frac{dx}{\operatorname{Tg} x} = \frac{\pi}{p+q} \operatorname{Tg} \left(\frac{p-q}{p+q} \frac{\pi}{2} \right) \quad \text{V. T. 2, N. 19.}$$

$$17) \int \frac{dx}{(p \sin x + q \cos x)(r \sin x + s \cos x)} = \frac{1}{ps - qr} \operatorname{I} \frac{ps}{qr} \quad (\text{VIII, 545}).$$

$$18) \int \frac{\sin x}{\sin^2 x + p^2 \cos^2 x} \frac{dx}{\sin x + q \cos x} = \frac{1}{p^2 + q^2} \left(\frac{1}{2} p \pi + q \operatorname{I} \frac{q}{p} \right) \quad (\text{VIII, 543}).$$

$$19) \int \frac{\cos x}{\sin^2 x + p^2 \cos^2 x} \frac{dx}{\sin x + q \cos x} = \frac{1}{p^2 + q^2} \left(\frac{q\pi}{2p} + \operatorname{I} \frac{p}{q} \right) \quad (\text{VIII, 543}).$$

$$20) \int \frac{\sin x}{\sin^2 x + p^2 \cos^2 x} \frac{dx}{\sin x - q \cos x} = \frac{1}{p^2 + q^2} \left(\frac{1}{2} p \pi + q \operatorname{I} \frac{p}{q} \right) \quad (\text{VIII, 544}).$$

$$21) \int \frac{\cos x}{\sin^2 x + p^2 \cos^2 x} \frac{dx}{\sin x - q \cos x} = \frac{1}{p^2 + q^2} \left(-\frac{q\pi}{2p} + \operatorname{I} \frac{p}{q} \right) \quad (\text{VIII, 544}).$$

$$22) \int \frac{\sin^2 x}{(1 + \cos \lambda \cdot \sin 2x)^2} \frac{dx}{\operatorname{Tg}^{p+1} x} = \frac{\pi}{2 \sin p \pi} \frac{p \sin \lambda \cdot \cos p \lambda - \cos \lambda \cdot \sin p \lambda}{\sin^2 \lambda} \quad \text{V. T. 20, N. 8.}$$

$$23) \int \frac{\operatorname{Tg}^{p+1} x}{(1 + \operatorname{Tg} x)^2} \frac{dx}{\sin 2x} = \frac{1-p}{4} p \pi \operatorname{Cosec} p \pi \quad \text{V. T. 16, N. 5.}$$

$$24) \int \left(\frac{\operatorname{Tg}^p x - \operatorname{Cot}^p x}{\cos x - \sin x} \right)^2 dx = 2 \left(1 - 2 p \pi \operatorname{Cot} 2 p \pi \right) \left[p^2 < \frac{1}{4} \right] \quad \text{V. T. 21, N. 11.}$$

$$25) \int \frac{1}{(Tg^p x + Cot^p x)^q} \frac{dx}{Tg x} = \frac{\sqrt{\pi}}{2^{2q+1} p} \frac{\Gamma(q)}{\Gamma(q + \frac{1}{2})} = 26) \int \frac{1}{(Tg^p x + Cot^p x)^q} \frac{dx}{Sin 2x} \text{ (VIII, 422).}$$

$$27) \int \frac{1}{(Cosec x - 1)^p} \frac{dx}{Tg x} = \pi Cosec p \pi \text{ V. T. 3, N. 5.}$$

$$28) \int \frac{Cos^{2a} x}{(1 - q Cos^2 x)^{a+1}} \frac{dx}{Tg^p x} = \frac{(p+1)^{a/2}}{2^{a/2}} \frac{\pi Sec \frac{1}{2} p \pi}{2(1-q)^{\frac{1}{2}(p+1)+a}} \left[\begin{matrix} p^2 < 1, \\ q^2 < 1 \end{matrix} \right] \text{ (IV, 118).}$$

$$29) \int \frac{(1 + Tg x)^q - 1}{(1 + Tg x)^{p+q}} \frac{dx}{Sin 2x} = \frac{1}{2} \{Z'(p+q) - Z'(p)\} \text{ V. T. 18, N. 5.}$$

$$1) \int \frac{Sin^2 x dx}{1 - 2q Cos 2x + q^2} = \frac{1}{4} \frac{\pi}{1+q} \text{ (VIII, 561).}$$

$$2) \int \frac{Cos^2 x dx}{1 - 2q Cos 2x + q^2} = \frac{1}{4} \frac{\pi}{1-q} [q^2 < 1], = \frac{1}{4} \frac{\pi}{q-1} [q^2 > 1] \text{ (VIII, 561).}$$

$$3) \int \frac{Tang^p x \cdot Sin 2x dx}{1 - 2q Cos 2x + q^2} = \frac{\pi}{4q} Cosec \frac{1}{2} p \pi \cdot \left\{ 1 - \left(\frac{1-q}{1+q} \right)^p \right\} [q^2 < 1], = \frac{\pi}{4q} Cosec \frac{1}{2} p \pi \cdot \left\{ 1 + \left(\frac{q-1}{q+1} \right)^p \right\} [q^2 > 1] \text{ (VIII, 678).}$$

$$4) \int \frac{1 - q Cos 2x}{1 - 2q Cos 2x + q^2} Tg^p x dx = \frac{1}{4} \pi Sec \frac{1}{2} p \pi \cdot \left\{ 1 + \left(\frac{1-q}{1+q} \right)^p \right\} [q^2 < 1], = \frac{1}{4} \pi Sec \frac{1}{2} p \pi \cdot \left\{ 1 - \left(\frac{q-1}{q+1} \right)^p \right\} [q^2 > 1] \text{ (VIII, 677).}$$

$$5) \int \frac{Cos^a x \cdot Cos a x dx}{1 - 2q Cos 2x + q^2} = \frac{\pi}{2(1-q^2)} \left(\frac{1+q}{2} \right)^a \text{ (VIII, 477) } \left. \vphantom{\int} \right\} [q^2 < 1].$$

$$6) \int \frac{Cos^a x \cdot Sin a x \cdot Sin 2x dx}{1 - 2q Cos 2x + q^2} = \frac{\pi}{4q} \left\{ \left(\frac{1+q}{2} \right)^a - \frac{1}{2^a} \right\} \text{ (VIII, 477) } \left. \vphantom{\int} \right\} [q^2 < 1].$$

$$7) \int \frac{1 - q Cos 2ax}{1 - 2q Cos 2ax + q^2} Cos^b x \cdot Cos b x dx = \frac{\pi}{2^{b+1}} \sum_{n=1}^{\infty} \binom{b}{na} q^n \text{ (IV, 138*)}. \left. \vphantom{\int} \right\} [q^2 < 1].$$

$$8) \int \frac{Cos^2 x dx}{1 + 2 Cos \lambda \cdot Sin x + Sin^2 x} = Cos \lambda \cdot l \{ 2(1 + Cos \lambda) \} + \lambda Sin \lambda - 1 \text{ V. T. 6, N. 6.}$$

$$9) \int \frac{dx}{p + q Sin^2 x + r Cos^2 x} = \frac{\pi}{2 \sqrt{(p+q)(p+r)}} \text{ (VIII, 305).}$$

$$10) \int \frac{Sin^p x}{1 - 2q Cos 2x + q^2} \frac{Sin x dx}{Cos^{p-1} x} = 2^{p-1} \frac{\pi}{q} \{ 1 - (1+q)^{-p} \} [q^2 < 1], = 2^{p-1} \frac{\pi}{q} \left\{ 1 - \left(\frac{q}{q+1} \right)^p \right\} [q^2 > 1]$$

$$11) \int \frac{1 - q \cos 2x}{1 - 2q \cos 2x + q^2} \frac{\cos px dx}{\cos^p x} = 2^{p-2} \pi \{1 + (1+q)^{-p}\} [q^2 < 1], = 2^{p-2} \pi \left\{1 + \left(\frac{q}{q+1}\right)^p\right\} [q^2 > 1]$$

$$12) \int \frac{\sin \{p(\frac{1}{2}\pi - x)\}}{1 - 2q \cos 2x + q^2} \frac{\cos x dx}{\sin^{p-1} x} = 2^{p-2} \frac{\pi}{q} \{1 - (1-q)^{-p}\} [q^2 < 1], = 2^{p-2} \frac{\pi}{q} \left\{1 - \left(\frac{q}{q-1}\right)^p\right\} [q^2 > 1]$$

$$13) \int \frac{\cos \{p(\frac{1}{2}\pi - x)\}}{1 - 2q \cos 2x + q^2} \frac{1 - q \cos 2x}{\sin^p x} dx = 2^{p-2} \pi \{1 + (1-q)^{-p}\} [q^2 < 1], = 2^{p-2} \pi \left\{1 + \left(\frac{q}{q-1}\right)^p\right\} [q^2 > 1] \text{ Sur 10) à 13) voyez Cauchy, Ann. Math. T. 17, 84.}$$

$$14) \int \frac{\sin^p x + \operatorname{Cosec}^p x}{\sin^q x + 2 \cos \lambda + \operatorname{Cosec}^q x} \frac{dx}{\operatorname{Tg} x} = \frac{\pi}{q} \operatorname{Cosec} \lambda \cdot \operatorname{Cosec} \frac{p\pi}{q} \cdot \sin \frac{p\lambda}{q} \text{ V. T. 6, N. 16.}$$

$$15) \int \frac{\sin^p x - 2 \cos \lambda + \operatorname{Cosec}^p x}{\sin^q x + 2 \cos \mu + \operatorname{Cosec}^q x} \frac{dx}{\operatorname{Tg} x} = \frac{\pi}{q} \operatorname{Cosec} \mu \cdot \operatorname{Cosec} \frac{p\pi}{q} \cdot \sin \frac{p\mu}{q} - \frac{\mu}{q} \operatorname{Cosec} \mu \cdot \cos \lambda \text{ V. T. 6, N. 20.}$$

$$16) \int \frac{dx}{\{1 + q(1 - p \sin^2 x)\} (1 - p \sin^2 x)} = \frac{\pi}{2 \sqrt{1-p}} - \frac{q\pi}{2 \sqrt{(1+q)(1-pq+q)}} \text{ (IV, 120).}$$

$$17) \int \frac{\sin^2 x \cdot \cos^2 x}{1 - 2q \cos 2x + q^2} \frac{dx}{1 - 2p \cos 2x + p^2} = \frac{\pi}{16} \frac{1}{1-pq} \text{ (VIII, 560).}$$

$$18) \int \frac{\operatorname{Tg}^{2p-1} x dx}{1 - 2r(\cos \alpha \cdot \cos^2 x + \cos \beta \cdot \sin^2 x) + r^2} = \frac{\pi}{(1 - 2r \cos \alpha + r^2)^{1-p}} \frac{\operatorname{Cosec} p\pi}{(1 - 2r \cos \beta + r^2)^p} \text{ Enneper, Schl. Z. B. 7, 346.}$$

$$1) \int \sin(q \operatorname{Tg} x) \frac{dx}{\sin 2x} = \frac{1}{4} \pi \text{ V. T. 51, N. 15.}$$

$$2) \int \sin(q \operatorname{Tg} x) \frac{dx}{\operatorname{Tg} x} = \frac{1}{2} \pi (1 - e^{-q}) \text{ V. T. 172, N. 1.}$$

$$3) \int \sin(q \operatorname{Tg} x) \frac{dx}{\cos 2x} = \operatorname{Ci}(q) \cdot \sin q - \operatorname{Si}(q) \cdot \cos q \text{ V. T. 161, N. 3.}$$

$$4) \int \sin(q \operatorname{Tg} x) \frac{\operatorname{Tg} x dx}{\cos 2x} = -\frac{1}{2} \pi \cos q \text{ V. T. 161, N. 4.}$$

$$5) \int \sin(q \operatorname{Tg} x) \cdot \cos^{p-2} x \frac{dx}{\sin^p x} = \frac{1}{2} \pi \operatorname{Cosec} \frac{1}{2} p\pi \cdot q^{p-1} \Gamma(p) \text{ Cauchy, Ann. Math. T. 17, 84.}$$

$$6) \int \sin(q Tg x) \frac{dx}{\cos 2x \cdot Tg x} = \frac{1}{2} \pi (1 - \cos q) \text{ V. T. 172, N. 4.}$$

$$7) \int \sin^2(q Tg x) \frac{dx}{Tg^2 x} = \frac{1}{4} \pi (e^{-2q} + 2q - 1) \text{ V. T. 172, N. 13.}$$

$$8) \int \sin^2(q Tg x) \frac{dx}{\cos 2x \cdot Tg^2 x} = \frac{1}{4} \pi (2q - \sin 2q) \text{ V. T. 172, N. 14.}$$

$$9) \int \cos(q Tg x) \frac{dx}{\cos 2x} = \frac{1}{2} \pi \sin q \text{ V. T. 161, N. 5.}$$

$$10) \int \cos(q Tg x) \frac{Tg x dx}{\cos 2x} = Ci(q) \cdot \cos q + Si(q) \cdot \sin q \text{ V. T. 161, N. 6.}$$

$$11) \int \cos(q Tg x) \left(\frac{\cos x}{\cos 2x} \right)^2 dx = \frac{1}{4} \pi (\sin q - q \cos q) \text{ V. T. 171, N. 3.}$$

$$12) \int \cos(q Tg x) \cdot \cos^{p-1} x \frac{dx}{\sin^p x} = \frac{1}{2} \pi \sec \frac{1}{2} p \pi \cdot \Gamma(p) q^{p-1} \text{ Cauchy, Ann. Math. T. 17, 84.}$$

$$13) \int \cos^2(q Tg x) \frac{dx}{\cos 2x} = \frac{1}{4} \pi \sin 2q \text{ V. T. 161, N. 10.}$$

$$14) \int [1 - \sec^2 x \cdot \cos(Tg x)] \frac{dx}{Tg x} = \Lambda \text{ V. T. 173, N. 21.}$$

$$15) \int \sin(a Tg x + q x) \frac{\cos^{q-1} x dx}{\sin x} = \frac{1}{2} \pi \text{ (IV, 121).}$$

$$1) \int \sin(q Cot x) \frac{dx}{Tg x} = \frac{1}{2} \pi e^{-q} \text{ V. T. 160, N. 4.}$$

$$2) \int \sin(q Cot x) \frac{Tg x dx}{\cos 2x} = \frac{1}{2} \pi (\cos q - 1) \text{ V. T. 172, N. 4.}$$

$$3) \int \sin(q Cot x) \frac{dx}{\cos 2x \cdot Tg x} = \frac{1}{4} \pi \cos q \text{ V. T. 161, N. 4.}$$

$$4) \int \sin^2(q Cot x) \frac{Tg^2 x dx}{\cos 2x} = \frac{1}{4} \pi (\sin 2q - 2q) \text{ V. T. 172, N. 14.}$$

$$5) \int \cos(q Cot x) \frac{dx}{Tg x} = -\frac{1}{2} \{e^{-q} Ei(q) + e^q Ei(-q)\} \text{ V. T. 160, N. 6.}$$

$$6) \int \cos(q \cot x) \frac{dx}{\cos 2x} = -\frac{1}{2} \pi \sin q \quad \text{V. T. 161, N. 5.}$$

$$7) \int \cos(q \cot x) \frac{dx}{\cos 2x \cdot \text{Tg } x} = -\text{Ci}(q) \cdot \cos q - \text{Si}(q) \cdot \sin q \quad \text{V. T. 161, N. 6.}$$

$$8) \int \cos(q \cot x) \left(\frac{\sin x}{\cos 2x} \right)^2 dx = \frac{1}{4} \pi (\sin q - q \cos q) \quad \text{V. T. 171, N. 3.}$$

$$9) \int \cos^2(q \cot x) \frac{dx}{\cos 2x} = -\frac{1}{4} \pi \sin 2q \quad \text{V. T. 161, N. 10.}$$

$$10) \int \sin(q \sin x) \frac{dx}{\text{Tg } x} = \text{Si}(p) \quad \text{V. T. 149, N. 5.}$$

$$11) \int \sin(p \text{Cosec } x) \cdot \sin(p \cot x) \frac{dx}{\cos x} = \frac{1}{2} \pi \sin p =$$

$$12) \int \sin(p \sec x) \cdot \sin(p \text{Tg } x) \frac{dx}{\sin x}$$

V. T. 149, N. 15.

$$13) \int \sin\left(\frac{1}{2}p\pi - q \cot x\right) \frac{dx}{\text{Tg}^{p-1} x} = \frac{1}{2} \pi e^{-q} = 14) \int \cos\left(\frac{1}{2}p\pi - q \cot x\right) \frac{dx}{\text{Tg}^p x} \quad \text{V. T. 160, N. 20, 21.}$$

$$1) \int dx \sqrt{1-p^2 \sin^2 x} = \text{E}'(p) \quad \text{M. D. 16, 29.}$$

$$2) \int \sin x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{2} \left\{ 1 + \frac{1-p^2}{2p} \ln \frac{1+p}{1-p} \right\} \quad (\text{VIII, 314}).$$

$$3) \int \cos x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{2} \sqrt{1-p^2} + \frac{1}{2p} \text{Arcsin } p \quad (\text{M. D. 16, 28}).$$

$$4) \int \cos 2x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{3p^2} \{ (2-p^2) \text{E}'(p) - 2(1-p^2) \text{F}'(p) \} \quad (\text{VIII, 255}).$$

$$5) \int \sin^2 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{3p^2} \{ (1-p^2) \text{F}'(p) - (1-2p^2) \text{E}'(p) \} \quad (\text{VIII, 254}).$$

$$6) \int \sin x \cdot \cos x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{3p^2} \{ 1 - \sqrt{1-p^2} \} \quad (\text{M. D. 16, 28}).$$

$$7) \int \cos^2 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{3p^2} \{ (1+p^2) \text{E}'(p) - (1-p^2) \text{F}'(p) \} \quad (\text{VIII, 254}).$$

$$8) \int \text{Tg}^2 x dx \sqrt{1-p^2 \sin^2 x} = \infty \quad (\text{IV, 123}).$$

- $$9) \int \sin^3 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{8p^3} \left\{ 3p^3 - 1 + \frac{1-p^2}{2} \frac{1+3p^2}{p} \ell \frac{1+p}{1-p} \right\} \text{ (VIII, 314).}$$
- $$10) \int \sin^2 x \cdot \cos x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{8p^3} \left\{ \frac{1}{p} \operatorname{Arcsin} p - (1-2p^2) \sqrt{1-p^2} \right\}.$$
- $$11) \int \sin x \cdot \cos^2 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{8p^3} \left\{ 1+p^3 - \frac{(1-p^2)^2}{2p} \ell \frac{1+p}{1-p} \right\}.$$
- $$12) \int \cos^3 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{8p^3} \left\{ (1+2p^2) \sqrt{1-p^2} - \frac{1-4p^2}{p} \operatorname{Arcsin} p \right\}.$$
- $$13) \int \sin^4 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{15p^4} \{ 2(1+2p^2)(1-p^2) F'(p) - (2+3p^2-8p^4) E'(p) \}.$$
- $$14) \int \sin^3 x \cdot \cos x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{15p^4} \{ 2 - (2+3p^2) \sqrt{1-p^2} \}.$$
- $$15) \int \sin^2 x \cdot \cos^2 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{15p^4} \{ 2(1-p^2+p^4) E'(p) - (2-p^2)(1-p^2) F'(p) \}.$$
- $$16) \int \sin x \cdot \cos^3 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{15p^4} \{ -2 + 5p^2 + 2 \sqrt{1-p^2} \}.$$
- $$17) \int \cos^4 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{15p^4} \{ 2(1-3p^2)(1-p^2) F'(p) - (2-7p^2-3p^4) E'(p) \}.$$
- $$18) \int \sin^5 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{48p^4} \left\{ (5p^2-3)(3p^2+1) + \frac{3}{2p} (1-p^2)(1+2p^2+5p^4) \ell \frac{1+p}{1-p} \right\}.$$
- $$19) \int \sin^4 x \cdot \cos x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{48p^4} \left\{ -(3+2p^2-8p^4) \sqrt{1-p^2} + \frac{3}{p} \operatorname{Arcsin} p \right\}.$$
- $$20) \int \sin^2 x \cdot \cos^2 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{48p^4} \left\{ (8-2p^2+3p^4) - \frac{3}{2p} (1+p^2)(1-p^2)^2 \ell \frac{1+p}{1-p} \right\}.$$
- $$21) \int \sin^3 x \cdot \cos^3 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{48p^4} \left\{ (3+4p^2+4p^4) \sqrt{1-p^2} - \frac{3}{p} (1-2p^2) \operatorname{Arcsin} p \right\}.$$
- $$22) \int \sin x \cdot \cos^4 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{48p^4} \left\{ -3 + 8p^2 + 3p^4 - \frac{3}{2p} (1-p^2)^2 \ell \frac{1+p}{1-p} \right\}.$$
- $$23) \int \cos^5 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{48p^4} \left\{ -(3+10p^2-8p^4) \sqrt{1-p^2} + \frac{3}{p} (1-4p^2+8p^4) \operatorname{Arcsin} p \right\}.$$
- $$24) \int \sin^6 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{105p^5} \{ (8+13p^2+24p^4)(1-p^2) F'(p) - (8+9p^2 + 16p^4 - 48p^6) E'(p) \}.$$

F. Circ. Dir. irr. ent. à un fact. $\sqrt{1-p^2 \sin^2 x}$. [$p^2 < 1$]. TABLE 53, suite. Lim. 0 et $\frac{\pi}{2}$.

$$25) \int \sin^4 x \cdot \cos x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{105 p^6} \{8 - (8 + 12 p^2 + 15 p^4) \sqrt{1-p^2}\}.$$

$$26) \int \sin^4 x \cdot \cos^2 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{105 p^6} \{(8 - 13 p^2 + 8 p^4) (1 + p^2) E'(p) - (8 - p^2 - 4 p^4) (1 - p^2) F'(p)\}.$$

$$27) \int \sin^3 x \cdot \cos^2 x dx \sqrt{1-p^2 \sin^2 x} = \frac{2}{105 p^6} \{-4 + 7 p^2 + (4 + 3 p^2) \sqrt{1-p^2}\}.$$

$$28) \int \sin^2 x \cdot \cos^4 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{105 p^6} \{(8 - 15 p^2 + 3 p^4) (1 - p^2) F'(p) - (8 - 19 p^2 + 9 p^4 - 6 p^6) E'(p)\}.$$

$$29) \int \sin x \cdot \cos^5 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{105 p^6} \{8 - 28 p^2 + 35 p^4 - 8 \sqrt{1-p^2}\}.$$

$$30) \int \cos^6 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{105 p^6} \{(8 - 33 p^2 + 58 p^4 + 15 p^6) E'(p) - (8 - 29 p^2 + 45 p^4) (1 - p^2) F'(p)\}.$$

$$31) \int \sin^7 x \cdot \cos x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{315 p^6} \{16 - (16 + 24 p^2 + 30 p^4 + 35 p^6) \sqrt{1-p^2}\}.$$

$$32) \int \sin^5 x \cdot \cos^2 x dx \sqrt{1-p^2 \sin^2 x} = \frac{2}{315 p^6} \{-4(2 - 3 p^2) + (8 + 8 p^2 + 5 p^4) \sqrt{1-p^2}\}.$$

$$33) \int \sin^3 x \cdot \cos^4 x dx \sqrt{1-p^2 \sin^2 x} = \frac{2}{315 p^6} \{(8 - 24 p^2 + 21 p^4) - 4(2 + p^2) \sqrt{1-p^2}\}.$$

$$34) \int \sin x \cdot \cos^7 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{315 p^6} \{-16 + 72 p^2 - 126 p^4 + 105 p^6 + 16 \sqrt{1-p^2}\}.$$

Sur 10) à 34) voyez M. D. 16, 28.

$$35) \int \sin^6 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{8 p^2} \{(1 + 2 p^2) E'(p) - (1 - p^2) F'(p)\} \text{ V. T. 21, N. 32.}$$

F. Circ. Dir. irrat. ent. Autre forme. [$p^2 < 1$]. TABLE 54. Lim. 0 et $\frac{\pi}{2}$.

$$1) \int dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{3} \{2(2 - p^2) E'(p) - (1 - p^2) F'(p)\} \text{ (VIII, 255).}$$

$$2) \int \sin x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{8} \left\{5 - 3 p^2 + \frac{3}{2 p} (1 - p^2)^2 \frac{1 + p}{1 - p}\right\}.$$

$$3) \int \sin^3 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{15 p^2} \{(3 - 4 p^2) (1 - p^2) F'(p) - (3 - 13 p^2 + 8 p^4) E'(p)\}.$$

$$4) \int \cos^2 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{15p^2} \{ (3+7p^2-2p^4) E'(p) - (3+p^2)(1-p^2) F'(p) \}.$$

$$5) \int \sin^2 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{48p^2} \left\{ -3 + 22p^2 - 15p^4 + \frac{3}{2p} (1+5p^2)(1-p^2)^2 \sqrt{\frac{1+p}{1-p}} \right\}.$$

$$6) \int \sin x \cdot \cos^2 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{48p^2} \left\{ 3 - 8p^2 - 3p^4 - \frac{3}{2p} (1-p^2)^2 \sqrt{\frac{1+p}{1-p}} \right\}.$$

$$7) \int \sin^4 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{35p^4} \{ (2+5p^2-8p^4)(1-p^2) F'(p) - 2(1+2p^2-12p^4+8p^6) E'(p) \}.$$

$$8) \int \sin^2 x \cdot \cos^2 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{105p^4} \{ (6-9p^2+19p^4-8p^6) E'(p) - 2(3-3p^2+2p^4)(1-p^2) F'(p) \}.$$

$$9) \int \cos^4 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{35p^4} \{ (2-9p^2-p^4)(1-p^2) F'(p) - 2(1-6p^2+p^4)(1+p^2) E'(p) \}.$$

Sur 2) à 9) voyez M. D. 16, 28.

$$10) \int \sin^q x \cdot \cos^{2-q} x \cdot (1-p^2 \sin^2 x)^{1-\frac{1}{2}q} dx = \frac{\Gamma\left(\frac{q+1}{2}\right) \Gamma\left(2-\frac{q}{2}\right)}{p^2 \sqrt{\pi(q-1)(q-3)(q-5)}} \left\{ \frac{1+(q-3)p+p^2}{(1+p)^{q-3}} - \frac{1-(q-3)p+p^2}{(1-p)^{q-3}} \right\} \quad \text{V. T. 7, N. 6.}$$

$$11) \int dx \sqrt[3]{\sin x} = \frac{1-\sqrt[3]{3}}{\sqrt[3]{3}} F\left(\cos \frac{\pi}{12}\right) + 2\sqrt[3]{3} \cdot E\left(\cos \frac{\pi}{12}\right) \quad (\text{VIII, 303}).$$

$$12) \int dx \sqrt[3]{\sin^2 x} = 3\sqrt[3]{3} \cdot E\left(\sin \frac{\pi}{12}\right) - 3 \frac{1+\sqrt[3]{3}}{2\sqrt[3]{3}} F\left(\sin \frac{\pi}{12}\right) \quad (\text{VIII, 303}).$$

$$1) \int \frac{dx}{\sqrt{\sin x}} = \sqrt{2} \cdot F\left(\sin \frac{\pi}{4}\right) \quad (\text{VIII, 298}). \quad 2) \int \frac{dx}{\cos 2x} \sqrt{\sin^4 x + \cos^4 x} = 0 \quad (\text{VIII, 545}).$$

$$3) \int \frac{dx}{\cos^2 x} \sqrt{1-p^2 \sin^2 x} = \infty \quad (\text{IV, 125}).$$

$$4) \int dx \sqrt{\frac{1-p^2 \sin^2 x}{\sin x}} = \frac{2a F'(a) + 2b F'(b)}{(a+b)^2} + 2 \frac{b-a}{(a+b)^2} \{ E'(b) - E'(a) \} \quad \left[\begin{array}{l} 2a^2 = \frac{(1-\sqrt{p})^2}{1+p}, \\ 2b^2 = \frac{(1+\sqrt{p})^2}{1+p} \end{array} \right]$$

V. T. 9, N. 12.

- 5) $\int \frac{dx}{\sqrt[3]{\sin x}} = \frac{1}{\sqrt[3]{3}} F' \left(\cos \frac{\pi}{12} \right)$ (VIII, 303). 6) $\int \frac{dx}{\sqrt[3]{\sin^2 x}} = \frac{3}{\sqrt[3]{3}} F' \left(\sin \frac{\pi}{12} \right)$ (VIII, 303).
- 7) $\int dx \sqrt[3]{\frac{\cos x}{\tan x}} = 2 \sqrt[3]{3} \sqrt[3]{2} E' \left(\cos \frac{\pi}{12} \right) - \frac{1 - \sqrt[3]{3}}{\sqrt[3]{3}} \sqrt[3]{2} F' \left(\cos \frac{\pi}{12} \right) =$ 8) $\int dx \sqrt[3]{\frac{\sin^2 x}{\cos x}}$
(VIII, 423).
- 9) $\int dx \sqrt[3]{\frac{\cos x}{\sin^2 x}} = \frac{\sqrt[3]{4}}{\sqrt[3]{3}} F' \left(\cos \frac{\pi}{12} \right) =$ 10) $\int dx \sqrt[3]{\frac{\tan x}{\cos x}}$ (VIII, 423).
- 11) $\int \frac{\cos x - \sin x}{\sqrt[3]{\cos^3 2x}} dx = 0$ V. T. 21, N. 4.
- 12) $\int \frac{\sin^{p-\frac{1}{2}} x dx}{\cos^{2p-1} x} = \frac{2^{\frac{1}{2}-p}}{2p-1} \frac{\Gamma(p+\frac{1}{2})\Gamma(1-p)}{\sqrt{\pi}} \sin \left(\frac{2p-1}{4} \pi \right) [p < 1]$ V. T. 8, N. 24.
- 13) $\int (\sec x - 1)^{p+\frac{1}{2}} \sin x dx = \frac{2p+1}{2} \pi \sec p \pi$ V. T. 3, N. 4.
- 14) $\int (\sec x - 1)^{p-\frac{1}{2}} \tan x dx = \pi \sec p \pi$ V. T. 3, N. 5.
- 15) $\int \sin(p \tan x) \frac{dx}{\cos x \sqrt{\sin 2x}} = \frac{1}{2} \sqrt{\frac{\pi}{p}} =$ 16) $\int \cos(p \tan x) \frac{dx}{\cos x \sqrt{\sin 2x}}$ V. T. 177, N. 1, 2.

- 1) $\int \frac{\sin^2 x dx}{\sqrt{3 + \cos 2x}} = F' \left(\sin \frac{\pi}{4} \right) - E' \left(\sin \frac{\pi}{4} \right)$ V. T. 8, N. 27.
- 2) $\int \frac{\cos^2 x dx}{\sqrt{3 + \cos 2x}} = \frac{1}{4} \sqrt{2}$ V. T. 8, N. 1.
- 3) $\int \frac{\cos^2 x dx}{\sqrt{3 - \cos 2x}} = F' \left(\sin \frac{\pi}{4} \right) - E' \left(\sin \frac{\pi}{4} \right)$ V. T. 8, N. 27.
- 4) $\int \frac{\sin^2 x dx}{\sqrt{3 - \cos 2x}} = \frac{1}{4} \sqrt{2}$ V. T. 8, N. 1.
- 5) $\int \frac{dx}{\sqrt{q + p \cos x}} = \frac{2}{\sqrt{p+q}} F \left(\frac{\pi}{4}, \sqrt{\frac{2p}{p+q}} \right)$ (VIII, 328).
- 6) $\int \frac{dx}{\sqrt{q - p \cos x}} = \frac{2}{\sqrt{p+q}} \left\{ F' \left(\sqrt{\frac{2p}{p+q}} \right) - F \left(\frac{\pi}{4}, \sqrt{\frac{2p}{p+q}} \right) \right\}$ (VIII, 328).

$$7) \int \frac{\cos x dx}{\sqrt{q+p \cos x}} = \frac{2}{p \sqrt{p+q}} \left\{ (p+q) E\left(\frac{\pi}{4}, \sqrt{\frac{2p}{p+q}}\right) - q F\left(\frac{\pi}{4}, \sqrt{\frac{2p}{p+q}}\right) \right\} \text{ (VIII, 328).}$$

$$8) \int \frac{\cos x dx}{\sqrt{q-p \cos x}} = \frac{2q}{p \sqrt{p+q}} \left\{ F\left(\sqrt{\frac{2p}{p+q}}\right) - F\left(\frac{\pi}{4}, \sqrt{\frac{2p}{p+q}}\right) \right\} - \frac{2}{p} \sqrt{p+q} \cdot \left\{ E\left(\sqrt{\frac{2p}{p+q}}\right) - E\left(\frac{\pi}{4}, \sqrt{\frac{2p}{p+q}}\right) \right\} \text{ (VIII, 329). Dans 5) à 8) on a } q > p > 0.$$

$$9) \int \frac{\operatorname{Tg}^{p-\frac{1}{2}} x dx}{(\sin x + \cos x)^2} = \frac{1-2p}{2} \pi \operatorname{Sec} p \pi \text{ V. T. 21, N. 1.}$$

$$10) \int \frac{\sin x dx}{(\sec x - 1)^{p+\frac{1}{2}}} = \frac{1+2p}{2} \pi \operatorname{Sec} p \pi \text{ V. T. 3, N. 4.}$$

$$11) \int \frac{\operatorname{Tg} x dx}{(\sec x - 1)^{p-\frac{1}{2}}} = \pi \operatorname{Sec} p \pi \text{ V. T. 3, N. 5.}$$

$$1) \int \frac{dx}{\sqrt{1-p^2 \sin^2 x}} = F(p) \text{ M, D. 16, 28. } 2) \int \frac{\sin x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{2p} \iota \frac{1+p}{1-p} \text{ (M, D. 16, 28).}$$

$$3) \int \frac{\cos x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{p} \operatorname{Arcsin} p \text{ (M, D. 16, 28).}$$

$$4) \int \frac{\cos 2x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{p^2} \{ 2 E(p) - (2-p^2) F(p) \} \text{ (VIII, 254).}$$

$$5) \int \frac{\sin^2 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{p^2} \{ F(p) - E(p) \} \text{ (VIII, 254).}$$

$$6) \int \frac{\sin x \cdot \cos x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{p^2} \{ 1 - \sqrt{1-p^2} \} \text{ (M, D. 16, 28).}$$

$$7) \int \frac{\cos^2 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{p^2} \{ E(p) - (1-p^2) F(p) \} \text{ (VIII, 254).}$$

$$8) \int \frac{\sin^3 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{2p^2} \left\{ -1 + \frac{1}{2p} (1+p^2) \iota \frac{1+p}{1-p} \right\} \text{ (M, D. 16, 28).}$$

$$9) \int \frac{\sin^2 x \cdot \cos x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{2p^2} \left\{ -\sqrt{1-p^2} + \frac{1}{p} \operatorname{Arcsin} p \right\} \text{ (M, D. 16, 28).}$$

$$10) \int \frac{\sin x \cdot \cos^2 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{2p^2} \left\{ 1 - \frac{1}{2p} (1-p^2) \iota \frac{1+p}{1-p} \right\} \text{ (M, D. 16, 28).}$$

$$11) \int \frac{\cos^3 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{2p^2} \left\{ \sqrt{1-p^2} - \frac{1}{p} (1-2p^2) \operatorname{Arcsin} p \right\} \text{ (M, D. 16, 28).}$$

$$12) \int \frac{\sin^4 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{8p^4} \{ (2+p^2) F'(p) - 2(1+p^2) E'(p) \} \text{ (VIII, 254).}$$

$$13) \int \frac{\sin^3 x \cdot \cos x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{8p^4} \{ 2 - (2+p^2) \sqrt{1-p^2} \} \text{ (M, D. 16, 28).}$$

$$14) \int \frac{\sin^2 x \cdot \cos^2 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{8p^4} \{ (2-p^2) E'(p) - 2(1-p^2) F'(p) \} \text{ (VIII, 254).}$$

$$15) \int \frac{\sin x \cdot \cos^3 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{8p^4} \{ -2 + 3p^2 + 2\sqrt{1-p^2} \} \text{ (M, D. 16, 28).}$$

$$16) \int \frac{\cos^4 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{8p^4} \{ 2(2p^2-1) E'(p) + (2-3p^2)(1-p^2) F'(p) \} \text{ (VIII, 254).}$$

$$17) \int \frac{\sin^5 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{8p^4} \left\{ -3(1+p^2) + \frac{1}{2p} (3+2p^2+3p^4) \operatorname{Arcsin} p \right\}.$$

$$18) \int \frac{\sin^4 x \cdot \cos x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{8p^4} \left\{ -(3+2p^2) \sqrt{1-p^2} + \frac{3}{p} \operatorname{Arcsin} p \right\}.$$

$$19) \int \frac{\sin^3 x \cdot \cos^2 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{8p^4} \left\{ 3-p^2 - \frac{1}{2p} (3+p^2)(1-p^2) \operatorname{Arcsin} p \right\}.$$

$$20) \int \frac{\sin^2 x \cdot \cos^3 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{8p^4} \left\{ (3-2p^2) \sqrt{1-p^2} - \frac{1}{p} (3-4p^2) \operatorname{Arcsin} p \right\}.$$

$$21) \int \frac{\sin x \cdot \cos^4 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{8p^4} \left\{ 5p^2 - 3 + \frac{3}{2p} (1-p^2)^2 \operatorname{Arcsin} p \right\}.$$

$$22) \int \frac{\cos^5 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{8p^4} \left\{ -3(1-2p^2) \sqrt{1-p^2} + \frac{1}{p} (3-8p^2+8p^4) \operatorname{Arcsin} p \right\}.$$

$$23) \int \frac{\sin^6 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{15p^6} \{ (8+3p^2+4p^4) F'(p) - (8+7p^2+8p^4) E'(p) \}$$

$$24) \int \frac{\sin^5 x \cdot \cos x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{15p^6} \{ 8 - (8+4p^2+3p^4) \sqrt{1-p^2} \}.$$

$$25) \int \frac{\sin^4 x \cdot \cos^2 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{15p^6} \{ (8-3p^2-2p^4) E'(p) - (8+p^2)(1-p^2) F'(p) \}.$$

$$26) \int \frac{\sin^3 x \cdot \cos^3 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{2}{15p^6} \{ -4 + 5p^2 + (4+p^2) \sqrt{1-p^2} \}.$$

$$27) \int \frac{\sin^2 x \cdot \cos^4 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{15p^6} \{ (8-9p^2)(1-p^2) F'(p) - (8-13p^2+3p^4) E'(p) \}.$$

$$28) \int \frac{\sin x \cdot \cos^5 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{15p^5} \{8 - 20p^2 + 15p^4 - 8\sqrt{1-p^2}\}.$$

$$29) \int \frac{\cos^5 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{15p^5} \{(8 - 23p^2 + 23p^4)E'(p) - (8 - 19p^2 + 15p^4)(1-p^2)F(p)\}.$$

$$30) \int \frac{\sin^7 x \cdot \cos x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{35p^5} \{16 - (16 + 8p^2 + 6p^4 + 5p^6)\sqrt{1-p^2}\}.$$

$$31) \int \frac{\sin^5 x \cdot \cos^3 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{2}{105p^5} \{-4(6 - 7p^2) + (24 + 8p^2 + 3p^4)\sqrt{1-p^2}\}.$$

$$32) \int \frac{\sin^3 x \cdot \cos^5 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{2}{105p^5} \{24 - 56p^2 + 35p^4 - 4(6 + p^2)\sqrt{1-p^2}\}.$$

$$33) \int \frac{\sin x \cdot \cos^7 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{35p^5} \{-16 + 56p^2 - 70p^4 + 35p^6 + 16\sqrt{1-p^2}\}.$$

Sur N. 17) à 33) voyez M, D. 16, 28.

$$1) \int \frac{dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{1-p^2} E'(p) \text{ (VIII, 327). } 2) \int \frac{\sin x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{1-p^2} \text{ (M, D. 16, 28).}$$

$$3) \int \frac{\cos x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{\sqrt{1-p^2}} \text{ (M, D. 16, 28).}$$

$$4) \int \frac{\cos 2x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{(1-p^2)p^2} \{2(1-p^2)F'(p) - (2-p^2)E'(p)\} \text{ V. T. 58, N. 5, 7.}$$

$$5) \int \frac{\sin^2 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{(1-p^2)p^2} \{E'(p) - (1-p^2)F'(p)\} \text{ (VIII, 327).}$$

$$6) \int \frac{\sin x \cdot \cos x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{p^2} \left\{-1 + \frac{1}{\sqrt{1-p^2}}\right\} \text{ (M, D. 16, 28).}$$

$$7) \int \frac{\cos^2 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{p^2} \{F'(p) - E'(p)\} \text{ (VIII, 328).}$$

$$8) \int \frac{\sin^3 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{(1-p^2)p^2} \left\{1 - \frac{1-p^2}{2p} \ln \frac{1+p}{1-p}\right\}.$$

$$9) \int \frac{\sin^2 x \cdot \cos x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{(1-p^2)p^2} \left\{\sqrt{1-p^2} - \frac{1}{p}(1-p^2) \operatorname{Arcsin} p\right\}.$$

$$10) \int \frac{\sin x \cdot \cos^3 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{p^2} \left\{-1 + \frac{1}{2p} \ln \frac{1+p}{1-p}\right\}.$$

- 11) $\int \frac{\cos^2 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{p^2} \left\{ -\sqrt{1-p^2} + \frac{1}{p} \operatorname{Arcsin} p \right\}.$
- 12) $\int \frac{\sin^4 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{(1-p^2)p^2} \{ (2-p^2) E'(p) - 2(1-p^2) F'(p) \}.$
- 13) $\int \frac{\sin^2 x \cdot \cos x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{p^2} \left\{ -2 + \frac{2-p^2}{\sqrt{1-p^2}} \right\}.$
- 14) $\int \frac{\sin^2 x \cdot \cos^2 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{p^2} \{ (2-p^2) F'(p) - 2 E'(p) \}.$
- 15) $\int \frac{\sin x \cdot \cos^3 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{p^2} \{ 2-p^2 - 2\sqrt{1-p^2} \}.$
- 16) $\int \frac{\cos^4 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{p^2} \{ (2-p^2) E'(p) - 2(1-p^2) F'(p) \}.$
- 17) $\int \frac{\sin^4 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{2(1-p^2)p^2} \left\{ 3-p^2 - \frac{1}{2p} (3+p^2)(1-p^2) \operatorname{Arcsin} p \right\}.$
- 18) $\int \frac{\sin^4 x \cdot \cos x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{2(1-p^2)p^2} \left\{ (3-p^2) \sqrt{1-p^2} - \frac{3}{p} (1-p^2) \operatorname{Arcsin} p \right\}.$
- 19) $\int \frac{\sin^2 x \cdot \cos^2 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{2p^2} \left\{ -3 + \frac{1}{2p} (3-p^2) \operatorname{Arcsin} p \right\}.$
- 20) $\int \frac{\sin^2 x \cdot \cos^3 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{2p^2} \left\{ -3\sqrt{1-p^2} + \frac{1}{p} (3-2p^2) \operatorname{Arcsin} p \right\}.$
- 21) $\int \frac{\sin x \cdot \cos^4 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{2p^2} \left\{ 3-2p^2 - \frac{1}{2p} (1-p^2) \operatorname{Arcsin} p \right\}.$
- 22) $\int \frac{\cos^5 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{2p^2} \left\{ (3-2p^2) \sqrt{1-p^2} - \frac{1}{p} (3-4p^2) \operatorname{Arcsin} p \right\}.$
- 23) $\int \frac{\sin^6 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3(1-p^2)p^2} \{ (8-3p^2-2p^4) E'(p) - (8+p^2)(1-p^2) F'(p) \}.$
- 24) $\int \frac{\sin^6 x \cdot \cos x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3p^2} \left\{ -8 + \frac{8-4p^2-p^4}{\sqrt{1-p^2}} \right\}.$
- 25) $\int \frac{\sin^6 x \cdot \cos^2 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3p^2} \{ (8-5p^2) F'(p) - (8-p^2) E'(p) \}.$
- 26) $\int \frac{\sin^6 x \cdot \cos^3 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{2}{3p^2} \{ 4-3p^2 - (4-p^2) \sqrt{1-p^2} \}.$
- 27) $\int \frac{\sin^6 x \cdot \cos^4 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3p^2} \{ (8-7p^2) E'(p) - (8-3p^2)(1-p^2) F'(p) \}.$

$$28) \int \frac{\sin x \cdot \cos^5 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3p^6} \{-8 + 12p^2 - 3p^4 + 8\sqrt{1-p^2}\}.$$

$$29) \int \frac{\cos^6 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3p^6} \{(8-9p^2)(1-p^2)F'(p) - (8-13p^2+3p^4)E'(p)\}.$$

$$30) \int \frac{\sin^7 x \cdot \cos x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{5p^5} \left\{-16 + \frac{16-8p^2-2p^4-p^6}{\sqrt{1-p^2}}\right\}.$$

$$31) \int \frac{\sin^5 x \cdot \cos^3 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{2}{15p^5} \{4(6-5p^2) - (24-8p^2-p^4)\sqrt{1-p^2}\}.$$

$$32) \int \frac{\sin^3 x \cdot \cos^5 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{2}{15p^5} \{-24 + 40p^2 - 15p^4 + 4(6-p^2)\sqrt{1-p^2}\}.$$

$$33) \int \frac{\sin x \cdot \cos^7 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{5p^4} \{16 - 40p^2 + 30p^4 - 5p^6 - 8\sqrt{1-p^2}\}.$$

Sur N. 8) à 33) voyez M, D. 16, 28.

$$1) \int \frac{dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3(1-p^2)^2} \{2(2-p^2)E'(p) - (1-p^2)F'(p)\} \text{ (M, D. 16, 28).}$$

$$2) \int \frac{\sin x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{3-p^2}{3(1-p^2)^2} \text{ (M, D. 16, 28).} \quad 3) \int \frac{\cos x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{3-2p^2}{8\sqrt{1-p^2}} \text{ (M, D. 16, 28).}$$

$$4) \int \frac{\cos 2x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3(1-p^2)^2 p^2} \{(2-p^2)(1-p^2)F'(p) - 2(1-p^2+p^4)E'(p)\} \\ \text{V. T. 59, N. 5, 7.}$$

$$5) \int \frac{\sin^2 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3(1-p^2)^2 p^2} \{(1+p^2)E'(p) - (1-p^2)F'(p)\}.$$

$$6) \int \frac{\sin x \cdot \cos x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3p^2} \left\{-1 + \frac{1}{\sqrt{1-p^2}}\right\}.$$

$$7) \int \frac{\cos^2 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3(1-p^2)p^2} \{(1-p^2)F'(p) - (1-2p^2)E'(p)\}.$$

$$8) \int \frac{\sin^3 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{2}{3(1-p^2)^2}.$$

$$9) \int \frac{\sin^3 x \cdot \cos x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{8\sqrt{1-p^2}}.$$

$$10) \int \frac{\sin x \cdot \cos^3 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3(1-p^2)}.$$

$$11) \int \frac{\cos^3 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{2}{8\sqrt{1-p^2}}.$$

$$12) \int \frac{\sin^4 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3(1-p^2)^2 p^2} \{(2-3p^2)(1-p^2)F'(p) - 2(1-2p^2)E'(p)\}.$$

$$13) \int \frac{\sin^3 x \cdot \cos x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3p^4} \left\{ 2 - \frac{2-3p^2}{\sqrt{1-p^2}} \right\}.$$

$$14) \int \frac{\sin^2 x \cdot \cos^2 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3(1-p^2)p^4} \{ (2-p^2) E'(p) - 2(1-p^2) F'(p) \}.$$

$$15) \int \frac{\sin x \cdot \cos^3 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3p^4} \left\{ -2 - p^2 + \frac{2}{\sqrt{1-p^2}} \right\}.$$

$$16) \int \frac{\cos^4 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3p^4} \{ (2+p^2) F'(p) - 2(1+p^2) E'(p) \}.$$

$$17) \int \frac{\sin^5 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3(1-p^2)^2 p^4} \left\{ -3 + 5p^2 + \frac{3}{p}(1-p^2)^2 \ell \frac{1+p}{1-p} \right\}.$$

$$18) \int \frac{\sin^4 x \cdot \cos x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3(1-p^2)^2 p^4} \left\{ -(3-4p^2) \sqrt{1-p^2} + \frac{3}{p}(1-p^2)^2 \operatorname{Arcsin} p \right\}.$$

$$19) \int \frac{\sin^3 x \cdot \cos^2 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3(1-p^2)p^4} \left\{ 3-2p^2 - \frac{3}{p}(1-p^2) \ell \frac{1+p}{1-p} \right\}.$$

$$20) \int \frac{\sin^2 x \cdot \cos^3 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3(1-p^2)p^4} \left\{ (3-p^2) \sqrt{1-p^2} - \frac{3}{p}(1-p^2) \operatorname{Arcsin} p \right\}.$$

$$21) \int \frac{\sin x \cdot \cos^4 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3p^4} \left\{ -3 - p^2 + \frac{3}{p} \ell \frac{1+p}{1-p} \right\}.$$

$$22) \int \frac{\cos^5 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3p^4} \left\{ -(3+2p^2) \sqrt{1-p^2} + \frac{3}{p} \operatorname{Arcsin} p \right\}.$$

$$23) \int \frac{\sin^6 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3(1-p^2)^2 p^6} \{ (8-9p^2)(1-p^2) F'(p) - (8-13p^2+3p^4) E'(p) \}.$$

$$24) \int \frac{\sin^5 x \cdot \cos x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3p^6} \left\{ 8 - \frac{8-12p^2+3p^4}{\sqrt{1-p^2}} \right\}.$$

$$25) \int \frac{\sin^4 x \cdot \cos^2 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3(1-p^2)p^6} \{ (8-7p^2) E'(p) - (8-3p^2)(1-p^2) F'(p) \}.$$

$$26) \int \frac{\sin^3 x \cdot \cos^3 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{2}{3p^6} \left\{ -4 + p^2 + \frac{4-3p^2}{\sqrt{1-p^2}} \right\}.$$

$$27) \int \frac{\sin^2 x \cdot \cos^4 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3p^6} \{ (8-5p^2) F'(p) - (8-p^2) E'(p) \}.$$

$$28) \int \frac{\sin x \cdot \cos^5 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3p^6} \{ 8 - 4p^2 - p^4 - 8\sqrt{1-p^2} \}.$$

$$29) \int \frac{\cos^6 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3p^6} \{ (8-3p^2+2p^4) E'(p) - (8+p^2)(1-p^2) F'(p) \}.$$

$$30) \int \frac{\sin^7 x \cdot \cos x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3p^3} \left\{ 16 - \frac{16 - 24p^2 + 6p^4 + p^6}{\sqrt{1-p^2}} \right\}.$$

$$31) \int \frac{\sin^5 x \cdot \cos^3 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{2}{3p^3} \left\{ -4(2-p^2) + \frac{8-8p^2+p^4}{\sqrt{1-p^2}} \right\}.$$

$$32) \int \frac{\sin^3 x \cdot \cos^5 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{2}{3p^3} \{ 8 - 8p^2 + p^4 - 4(2-p^2) \sqrt{1-p^2} \}.$$

$$33) \int \frac{\sin x \cdot \cos^7 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{3p^3} \{ -16 + 24p^2 - 6p^4 - p^6 + 16\sqrt{1-p^2} \}.$$

Sur 5) à 33) voyez M, D. 16, 28.

$$1) \int \frac{dx}{\sqrt{1+\sin^2 x}} = \frac{1}{2} \sqrt{2} \cdot F\left(\sin \frac{\pi}{4}\right) \text{ (VIII, 298).}$$

$$2) \int \frac{\sin^2 x dx}{\sqrt{1+\sin^2 x}} = \sqrt{2} \cdot E\left(\sin \frac{\pi}{4}\right) - \frac{1}{\sqrt{2}} F\left(\sin \frac{\pi}{4}\right) \text{ (VIII, 321).}$$

$$3) \int \frac{\cos^2 x dx}{\sqrt{1+\sin^2 x}} = \sqrt{2} \cdot \left\{ F\left(\sin \frac{\pi}{4}\right) - E\left(\sin \frac{\pi}{4}\right) \right\} \text{ (VIII, 321).}$$

$$4) \int \frac{\sin^2 x dx}{\sqrt{1+\sin^2 x}} = \frac{1}{2} \text{ V. T. 8, N. 1.} \quad 5) \int \frac{\sin x dx}{\sqrt{1+p^2 \sin^2 x}} = \frac{1}{p} \operatorname{Arctg} p \text{ V. T. 12, N. 6*}.$$

$$6) \int \frac{\sin^3 x dx}{\sqrt{1+p^2 \sin^2 x}} = \frac{1}{p^2} \left\{ \operatorname{Arctg} p - \frac{p}{1+p^2} \right\} \text{ V. T. 60, N. 5.}$$

$$7) \int dx \sqrt{\frac{1-p^2 \sin^4 x}{1+\sin^2 x}} = \frac{a F'(a) + b F'(b)}{(a+b)^2} + \frac{a-b}{(a+b)^2} \{ E'(a) - E'(b) \} \left[\begin{array}{l} 2a^2 = \frac{(1-\sqrt{p})^2}{1+p}, \\ 2b^2 = \frac{(1+\sqrt{p})^2}{1+p} \end{array} \right] \text{ V. T. 9, N. 12.}$$

$$8) \int \frac{\sin^4 x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{3}{8p^2} \{ E'(p) - F'(p) \} + \frac{1}{2} F'(p) [p < 1] \text{ V. T. 21, N. 31.}$$

$$9) \int \frac{\cos^2 x dx}{\sqrt{1-p^2 \cos^2 x}} = \frac{1}{2} F'(p) \text{ (IV, 141*)}.$$

$$10) \int \frac{dx}{p \sin^2 x + q \cos^2 x} \sqrt{1-p \sin^2 x - q \cos^2 x} = \frac{\pi}{2 \sqrt{pq}} + F\left(\sqrt{\frac{p-q}{1-q}}\right) \left\{ \frac{1-p}{p \sqrt{1-q}} - \frac{1}{\sqrt{pq}} \right. \\ \left. E\left(\sqrt{\frac{1-p}{1-q}}, \operatorname{Arcsin}\left[\sqrt{\frac{q}{p}}\right]\right) \right\} + \frac{1}{\sqrt{pq}} F\left(\sqrt{\frac{1-p}{1-q}}, \operatorname{Arcsin}\left[\sqrt{\frac{q}{p}}\right]\right) \left\{ F\left(\sqrt{\frac{p-q}{1-q}}\right) - E\left(\sqrt{\frac{p-q}{1-q}}\right) \right\} \\ [0 < q < p < 1] \text{ (VIII, 308).}$$

$$1) \int \frac{1}{\sin x + \cos x} \frac{dx}{\cos x \cdot \operatorname{Tg}^{p+\frac{1}{2}} x} = \pi \operatorname{Sec} p \pi \quad \text{V. T. 17, N. 10.}$$

$$2) \int \frac{\sin^{p-\frac{1}{2}} x}{\sin x + \cos x} \frac{dx}{\cos^{p+\frac{1}{2}} x} = \pi \operatorname{Sec} p \pi \quad \text{V. T. 17, N. 10.}$$

$$3) \int \frac{1}{(\sin x + \cos x)^2} \frac{dx}{\operatorname{Tg}^{p-\frac{1}{2}} x} = \frac{1-2p}{2} \pi \operatorname{Sec} p \pi \quad \text{V. T. 21, N. 1.}$$

$$4) \int \frac{1}{(\operatorname{Cosec} x - 1)^{p-\frac{1}{2}}} \frac{dx}{\operatorname{Tg} x} = \pi \operatorname{Sec} p \pi \quad \text{V. T. 23, N. 10.}$$

$$5) \int \frac{\sin^{q+1} x}{(1-p^2 \sin^2 x)^{\frac{1}{2}(q+1)}} \frac{dx}{\cos^q x} = \frac{(1-p)^{-q} - (1+p)^{-q}}{4pq\sqrt{\pi}} \Gamma\left(\frac{q+2}{2}\right) \Gamma\left(\frac{1-q}{2}\right) \quad \text{V. T. 12, N. 32.}$$

$$6) \int \frac{\operatorname{Tg}^{2q} x}{(1+\operatorname{Sec}^2 x)^{p+\frac{1}{2}}} \frac{dx}{\cos^2 x} = 2^{q-p-1} \frac{\Gamma(q+\frac{1}{2})\Gamma(p-q)}{\Gamma(p+\frac{1}{2})} \quad \text{V. T. 23, N. 9.}$$

$$7) \int \frac{\sin x \cdot \cos x}{1 - \sin^2 \lambda \cdot \sin^2 x} \frac{dx}{\sqrt{\cos^2 \mu - \sin^2 \lambda \cdot \sin^2 x}} = \frac{1}{\sin^2 \lambda \cdot \sin \mu} \left\{ \frac{\pi}{2} - \mu - \operatorname{Arccos} \left(\frac{\sin \mu}{\cos \lambda} \right) \right\} \quad (\text{IV, 130}).$$

$$8) \int \frac{\cos^2 x}{1 - \sin^2 \lambda \cdot \sin^2 x} \frac{dx}{\sqrt{\cos^2 \mu - \sin^2 \lambda \cdot \sin^2 x}} = \operatorname{Sec} \mu \cdot F' \left(\frac{\sin \lambda}{\cos \mu} \right) - \frac{\cos \lambda}{\sin^2 \lambda \cdot \sin \mu} \left\{ F' \left(\frac{\sin \lambda}{\cos \mu} \right) \right. \\ \left. E \left(\frac{\sin \lambda}{\cos \mu}, \frac{\pi}{2} - \mu \right) - E' \left(\frac{\sin \lambda}{\cos \mu} \right) F \left(\frac{\sin \lambda}{\cos \mu}, \frac{\pi}{2} - \mu \right) \right\} \quad (\text{IV, 130}).$$

$$9) \int \frac{\cos^2 x}{1 + \cot^2 \mu \cdot \sin^2 x} \frac{dx}{\sqrt{1 - q^2 \sin^2 x}} = \frac{\operatorname{Tg} \mu}{2 \sqrt{\cos^2 \mu + q^2 \sin^2 \mu}} [\pi + 2 F'(q) F \{ \sqrt{1 - q^2}, \mu \} - \\ - 2 F'(q) E \{ \sqrt{1 - q^2}, \mu \} - 2 E'(q) F \{ \sqrt{1 - q^2}, \mu \}] \quad (\text{IV, 130}).$$

$$10) \int \frac{\sin x dx}{\sqrt{(r^2 \sin^2 x + p^2 \cos^2 x)(r^2 \sin^2 x + q^2 \cos^2 x)}} = \frac{1}{r \sqrt{r^2 - p^2}} F \left(\operatorname{Arccos} \frac{p}{r}, \sqrt{\frac{r^2 - q^2}{r^2 - p^2}} \right) [r > q > p] \\ (\text{IV, 130}).$$

$$11) \int \frac{dx}{\sqrt{\sin x \cdot (l^2 \sin x + p^2 \cos x)(m^2 \sin x + q^2 \cos x)(n^2 \sin x + r^2 \cos x)}} = \frac{2}{q \sqrt{r^2 l^2 - p^2 n^2}} \\ F \left\{ \operatorname{Arccos} \left(\frac{pn}{rl} \right), \frac{r}{q} \sqrt{\frac{q^2 l^2 - p^2 m^2}{r^2 l^2 - p^2 n^2}} \right\} \left[\begin{matrix} ql > pm, \\ rl > pn \end{matrix} \right] \quad \text{V. T. 21, N. 17.}$$

$$12) \int \frac{dx}{\sqrt{\cos x \cdot (l^2 \sin x + p^2 \cos x)(m^2 \sin x + q^2 \cos x)(n^2 \sin x + r^2 \cos x)}} = \frac{2}{m \sqrt{p^2 n^2 - r^2 l^2}} \\ F \left\{ \operatorname{Arccos} \left(\frac{pn}{rl} \right), \frac{n}{m} \sqrt{\frac{p^2 m^2 - q^2 l^2}{p^2 n^2 - r^2 l^2}} \right\} \left[\begin{matrix} pm > ql, \\ pn > rl \end{matrix} \right] \quad \text{V. T. 21, N. 17.}$$

$$13) \int \frac{dx}{\sqrt{\{1 - (\cos^2 \alpha - \sin^2 \alpha \cdot \cos^2 \beta) \sin^2 x\} \{1 - (\sin^2 \beta - \tan^2 \alpha \cdot \cos^2 \beta) \sin^2 x\}}} = \frac{\sin \beta}{\sin \alpha}$$

$$F \left\{ \sqrt{1 - \frac{\sin^2 2 \beta}{\sin^2 2 \alpha}} \right\} \text{ (VIII, 426).}$$

$$1) \int \sin ax \cdot \sin bx dx = 0 [a \geq b], = \frac{1}{2} \pi [a = b] = \quad 2) \int \cos ax \cdot \cos bx dx \text{ (VIII, 332).}$$

$$3) \int \sin px \cdot \sin ax dx = (-1)^{a-1} \frac{a \sin p \pi}{a^2 - p^2} \text{ (IV, 131).}$$

$$4) \int \cos px \cdot \cos ax dx = (-1)^{a-1} \frac{p \sin p \pi}{a^2 - p^2} \text{ (IV, 131).}$$

$$5) \int \sin 2ax \cdot \cot x dx = \pi = \quad 6) \int \sin \{(2a+1)x\} \cdot \operatorname{cosec} x dx \text{ Cayley, C. \& D. Math. J. V. 6, 136.}$$

$$7) \int \sin^q x \cdot \sin qx dx = \frac{\pi}{2^q} \sin \frac{1}{2} q \pi \text{ (VIII, 533).} \quad 8) \int \sin^q x \cdot \cos qx dx = \frac{\pi}{2^q} \cos \frac{1}{2} q \pi \text{ (VIII, 533).}$$

$$9) \int \sin^q x \cdot \sin px dx = \frac{\pi}{2^q} \frac{\sin \frac{1}{2} p \pi \cdot \Gamma(q+1)}{\Gamma\left(\frac{p+q}{2}+1\right) \Gamma\left(\frac{q-p}{2}+1\right)} \text{ (VIII, 533).}$$

$$10) \int \sin^q x \cdot \cos px dx = \frac{\pi}{2^q} \frac{\cos \frac{1}{2} p \pi \cdot \Gamma(q+1)}{\Gamma\left(\frac{p+q}{2}+1\right) \Gamma\left(\frac{q-p}{2}+1\right)} \text{ (VIII, 533).}$$

$$11) \int \sin^{q-1} x \cdot \cos \left\{ p \left(\frac{\pi}{2} - x \right) \right\} dx = 2^{q-1} \frac{\Gamma\left(\frac{q-p}{2}\right) \Gamma\left(\frac{q+p}{2}\right) \Gamma(q)}{\Gamma(q-p) \Gamma(q+p)} \text{ V. T. 62, N. 9, 10.}$$

$$12) \int \cos px \cdot \cos rx \cdot \sin x dx = \frac{1}{2} \left\{ \frac{1 - (-1)^{1-r-p}}{1 - (r+p)^2} + \frac{1 - (-1)^{1+p-r}}{1 + (r-p)^2} \right\}.$$

$$13) \int \cos px \cdot \cos rx \cdot \sin qx dx = \frac{1}{4} \left\{ \frac{1 - (-1)^{p+r+q}}{p+r+q} + \frac{1 - (-1)^{q-p-r}}{q-p-r} + \frac{1 - (-1)^{q+p-r}}{q+p-r} + \frac{1 - (-1)^{q-p+r}}{q-p+r} \right\}.$$

$$14) \int \cos(p+p_1 x) \cdot \cos(q+q_1 x) \cdot \sin(r+r_1 x) dx = \frac{1}{4} \left\{ \frac{1}{p_1+q_1+r_1} [\cos(p+q+r) - \cos\{(p+q+r) + (p_1+q_1+r_1)\pi\}] + \right.$$

$$+ \frac{1}{r_1-p_1-q_1} [\cos(r-p-q) - \cos\{(r-p-q) + (r_1-p_1-q_1)\pi\}] +$$

$$+ \frac{1}{p_1-q_1+r_1} [\cos(p-q+r) - \cos\{(p-q+r) + (p_1-q_1+r_1)\pi\}] + \frac{1}{r_1-p_1+q_1}$$

$$\left. [\cos(r-p+q) - \cos\{r-p+q + (r_1-p_1+q_1)\pi\}] \right\}.$$

$$15) \int \cos(p+p_1 x) \cdot \cos(q+q_1 x) \cdot \cos(r+r_1 x) dx = -\frac{1}{4} \left\{ \frac{1-(-1)^{r_1+p_1-q_1}}{r_1+p_1-q_1} \sin(r+p-q) + \right. \\ \left. + \frac{1-(-1)^{p_1+q_1+r_1}}{p_1+q_1+r_1} \sin(p+q+r) + \frac{1-(-1)^{p_1-q_1-r_1}}{p_1-q_1-r_1} \sin(p-q-r) + \right. \\ \left. + \frac{1-(-1)^{q_1-p_1-r_1}}{q_1-p_1-r_1} \sin(q-p-r) \right\}.$$

$$16) \int \cos px \cdot \cos qx \cdot \cos rx dx = \frac{\pi}{2} A, \text{ où } A = 0, 1, 2, 4, \text{ selon que le nombre des dénominateurs} \\ \text{nuls } p \pm q \pm r \text{ sera } 0, 1, 2, 3. \text{ Sur 12) à 16) voyez Volpicelli, C. R. 54, 223.}$$

$$1) \int (1 - 2p \cos x + p^2)^a dx = \pi \sum_0^a \binom{a}{n} p^{2n} \text{ (VIII, 482).}$$

$$2) \int (1 - 2p \cos x + p^2)^a \cos ax dx = (-1)^a p^a \pi \text{ (VIII, 483).}$$

$$3) \int (1 - 2p \cos x + p^2)^a \cos bx dx = \pi (-p)^b \frac{a^{b/2-1}}{1^{b/2}} \sum_0^a \binom{a}{n} \frac{(a-b)^{n/2-1}}{(b+1)^{n/2}} p^{2n} \text{ (VIII, 482).}$$

$$4) \int \cos(q \sin x) dx = \pi \sum_0^\infty \frac{(-q^2)^n}{(2^{n+1/2})^2} \text{ (IV, 133).} \quad 5) \int \cos(q \cos x) \cdot \sin x dx = \frac{2}{q} \sin q \text{ (IV, 133).}$$

$$6) \int \cos(q \cos x) \cdot \sin^2 x dx = \frac{4}{q^2} (\sin q - q \cos q) \text{ (IV, 133).}$$

$$7) \int \sin(q \sin x) \cdot \sin 2ax dx = 0 \text{ (IV, 133).}$$

$$8) \int \sin(q \sin x) \cdot \sin \{(2a+1)x\} dx = \left(\frac{q}{2}\right)^{2a+1} \frac{\pi}{1^{2a+1/2}} \left\{ 1 + \sum_1^\infty (-1)^n \frac{(\frac{1}{2}q)^{2n}}{1^{n/2} (2a+2)^{n/2}} \right\} \text{ (IV, 133).}$$

$$9) \int \cos(q \sin x) \cdot \cos 2ax dx = \left(\frac{q}{2}\right)^{2a} \frac{\pi}{1^{2a/2}} \left\{ 1 + \sum_1^\infty (-1)^n \frac{(\frac{1}{2}q)^{2n}}{1^{n/2} (2a+1)^{n/2}} \right\} \text{ (IV, 133).}$$

$$10) \int \cos(q \sin x) \cdot \cos \{(2a+1)x\} dx = 0 \text{ (IV, 133).}$$

$$11) \int \cos \{a(x - q \sin x)\} dx = \frac{\pi}{1^{a/2}} \left(\frac{aq}{2}\right)^a \sum_0^\infty (-1)^n \frac{(\frac{1}{2}aq)^{2n}}{1^{n/2} (1+a)^{n/2}} \text{ (IV, 134).}$$

$$12) \int (1 - q \cos x)^2 \cos \{a(x - q \sin x)\} dx = \frac{-\pi}{a \cdot 1^{a/2}} \left(\frac{aq}{2}\right)^a \sum_0^\infty (-1)^n \left(\frac{1}{2}aq\right)^{2n} \frac{a+2n}{1^{n/2} a^{n+1/2}} \\ \text{(IV, 134).}$$

$$1) \int \frac{\sin 2ax \, dx}{\sin x} = 0.$$

$$2) \int \frac{\sin \{(2a+1)x\} \, dx}{\sin x} = \pi.$$

$$3) \int \frac{\sin ax \cdot \cos bx \, dx}{\sin x} = 0 \ [a < b], = \pi \ [a > b].$$

$$4) \int \frac{\sin 2ax \cdot \cos \{(2a-2b+1)x\} \, dx}{\sin x} = 0 = 5) \int \frac{\sin \{(2a+1)x\} \cdot \cos \{(2a-2b+1)x\} \, dx}{\sin x}.$$

$$6) \int \frac{\sin 2ax \cdot \cos \{(2a-2b)x\} \, dx}{\sin x} = \pi =$$

$$7) \int \frac{\sin \{(2a+1)x\} \cdot \cos \{(2a-2b)x\} \, dx}{\sin x}.$$

$$8) \int \frac{\cos ax \cdot \sin \{(a+2b)x\} \, dx}{\sin x} = 0.$$

$$9) \int \frac{\cos ax \cdot \sin \{(a+2b-1)x\} \, dx}{\sin x} = \pi.$$

$$10) \int \frac{\cos ax \cdot \sin \{(a-b)x\} \, dx}{\sin x} = 0 =$$

$$11) \int \frac{\sin ax \cdot \cos \{(a+b)x\} \, dx}{\sin x}.$$

Sur 1) à 11) voyez Vernier, Ann. Math. T. 15, 165.

$$12) \int \frac{\cos ax \, dx}{1+p \cos x} = \frac{\pi}{\sqrt{1-p^2}} \left\{ \frac{\sqrt{1-p^2}-1}{p} \right\}^a \text{ (IV, 185).}$$

$$13) \int \frac{\sin^a x \, dx}{p+q \cos x} = \frac{2\sqrt{\pi}}{a(p^2-q^2)^{\frac{a+1}{2}}} \frac{\Gamma\left(\frac{a+1}{2}\right)}{\Gamma\left(\frac{a}{2}\right)} \text{ (IV, 185).}$$

$$14) \int \frac{dx}{(p+q \cos x)^{a+1}} = \frac{1^{a/2}}{1^{a/2}} \frac{\pi}{\sqrt{p^2-q^2}} \sum_0^\infty \left(-\frac{1}{2}\right)^n \frac{(n+1)^{n/2}}{(2a-1)^{n/2}} \binom{a}{2n} \frac{p^{a-n}}{(p^2-q^2)^{a-n}} \text{ (VIII, 571).}$$

$$15) \int \frac{\sin^a x \, dx}{(p+q \cos x)^{a+1}} = \frac{1^{a-1/2}}{2^{a-2} (p^2-q^2)^{\frac{a+1}{2}}} \left\{ \Gamma\left(\frac{a}{2}\right) \right\}^2 \frac{\pi}{a} \text{ (IV, 185).}$$

$$16) \int \frac{\cos^a x \, dx}{(p+q \cos x)^{a+1}} = \frac{1^{a/2}}{1^{a/2}} \frac{(-1)^a \pi}{\sqrt{p^2-q^2}} \sum_0^\infty \frac{(n+1)^{n/2}}{(2a-1)^{n/2}} \binom{a}{2n} \frac{1}{2^n} \frac{q^{a-2n}}{(p^2-q^2)^{a-n}} \text{ (VIII, 571).}$$

Dans 13) à 16) on a $p > q$.

$$17) \int \frac{\sin^{2a-1} x \, dx}{(p+q \cos x)^{2a+1}} = \frac{p}{\Gamma\left(\frac{a+1}{2}\right)} \frac{1^{a-1/2} \sqrt{\pi}}{(p^2+q^2)^{a+1}} \text{ Cauchy, C. R. 1848, 356.}$$

$$18) \int \frac{\sin x \, dx}{p^2+q^2 \cos^2 x} = \frac{2}{pq} \operatorname{Arctg} \frac{q}{p} \text{ (VIII, 543).}$$

$$19) \int \frac{\sin \{a(x-q \sin x)\}}{(1-q \cos x)^2} \sin x \, dx = \frac{\pi}{2} \frac{a^2}{1^{a/2}} \left(\frac{aq}{2}\right)^{a-1} \sum_0^\infty \left(\frac{aq}{2}\right)^{2n} \frac{(-1)^n}{1^{n/2} (1+a)^{n/2}} \text{ (IV, 184).}$$

$$20) \int \frac{\cos \{a(x-q \sin x)\}}{(1-q \cos x)^2} (q - \cos x) \, dx = \frac{\pi a^2}{1^{a/2}} \left(\frac{aq}{2}\right)^{a-1} \sum_0^\infty \left(\frac{aq}{2}\right)^{2n} (-1)^n \frac{a+2n}{1^{n/2} (a+1)^{n/2}} \text{ (IV, 184).}$$

$$1) \int \frac{dx}{1-2p \cos x + p^2} = \frac{\pi}{1-p^2} [p^2 < 1], = \frac{\pi}{p^2-1} [p^2 > 1] \text{ (VIII, 207).}$$

$$2) \int \frac{\cos x dx}{1-2p \cos x + p^2} = \frac{p\pi}{1-p^2} [p^2 < 1], = \frac{\pi}{p(p^2-1)} [p^2 > 1] \text{ (VIII, 207).}$$

$$3) \int \frac{\cos ax dx}{1-2p \cos x + p^2} = \frac{\pi p^a}{1-p^2} [p^2 < 1], = \frac{\pi p^{-a}}{p^2-1} [p^2 > 1] \text{ (VIII, 276).}$$

$$4) \int \frac{\sin ax \cdot \sin x dx}{1-2p \cos x + p^2} = \frac{1}{2} \pi p^{a-1} [p^2 < 1], = \frac{\pi}{2} \frac{1}{p^{a+1}} [p^2 > 1] \text{ (VIII, 276).}$$

$$5) \int \frac{\cos ax \cdot \cos x dx}{1-2p \cos x + p^2} = \frac{\pi}{2} \frac{1+p^2}{1-p^2} p^{a-1} [p^2 < 1], = \frac{\pi}{2p^{a+1}} \frac{p^2+1}{p^2-1} [p^2 > 1] \text{ (VIII, 276).}$$

$$6) \int \frac{\sin 2ax \cdot \sin x dx}{1-2p \cos 2x + p^2} = 0 = 7) \int \frac{\sin \{(2a-1)x\} \cdot \sin 2x dx}{1-2p \cos 2x + p^2} \text{ (IV, 137, 138) } [p^2 \leq 1].$$

$$8) \int \frac{\sin \{(2a-1)x\} \cdot \sin x dx}{1-2p \cos 2x + p^2} = \frac{\pi}{2} \frac{p^{a-1}}{1+p} [p^2 < 1], = \frac{\pi}{2p^a} \frac{1}{1+p} [p^2 > 1] \text{ (IV, 137).}$$

$$9) \int \frac{\cos \{(2a-1)x\} dx}{1-2p \cos 2x + p^2} = 0 = 10) \int \frac{\cos 2ax \cdot \cos x dx}{1-2p \cos 2x + p^2} \text{ (IV, 138) } [p^2 \leq 1].$$

$$11) \int \frac{\cos \{(2a-1)x\} \cdot \cos x dx}{1-2p \cos 2x + p^2} = \frac{\pi}{2} \frac{p^{a-1}}{1-p} [p^2 < 1], = \frac{\pi}{2p^a} \frac{1}{p-1} [p^2 > 1] \text{ (IV, 138).}$$

$$12) \int \frac{\cos \{(2a-1)x\} \cdot \cos 2x dx}{1-2p \cos 2x + p^2} = 0 [p^2 \leq 1] \text{ (IV, 138).}$$

$$13) \int \frac{\sin ax - p \sin \{(a-1)x\}}{1-2p \cos x + p^2} \sin bx dx = \frac{\pi}{2} (p^{b-a} - 1) = 14) \int \frac{\cos ax - p \cos \{(a-1)x\}}{1-2p \cos x + p^2} \cos bx dx$$

(VIII, 276*).

$$15) \int \frac{\cos^s rx \cdot \cos^{s_1} r_1 x \dots \cos \{(sr + s_1 r_1 + \dots)x\} dx}{1-2p \cos x + p^2} = \frac{\pi}{1-p^2} \left(\frac{1+p^{2r}}{2}\right)^s \left(\frac{1+p^{2r_1}}{2}\right)^{s_1} \dots$$

$$16) \int \frac{\cos^s rx \cdot \cos^{s_1} r_1 x \dots \sin \{(sr + s_1 r_1 + \dots)x\} dx}{1-2p \cos x + p^2} = \frac{\pi}{2p} \left(\frac{1+p^{2r}}{2}\right)^s \left(\frac{1+p^{2r_1}}{2}\right)^{s_1} \dots -$$

$-\frac{\pi}{2^{s+s_1+\dots+1} p}$

$$17) \int \frac{\sin^s rx \cdot \sin^{s_1} r_1 x \dots \cos \{(s + s_1 + \dots)\frac{1}{2}\pi - (sr + s_1 r_1 + \dots)x\} dx}{1-2p \cos x + p^2} = \frac{\pi}{1-p^2} \left(\frac{1-p^{2r}}{2}\right)^s$$

$\left(\frac{1-p^{2r_1}}{2}\right)^{s_1} \dots$

$$18) \int \frac{\sin^s rx \cdot \sin^{s_1} r_1 x \dots \sin \{(s + s_1 + \dots)\frac{1}{2}\pi - (sr + s_1 r_1 + \dots)x\} dx}{1-2p \cos x + p^2} = \frac{\pi}{2^{s+s_1+\dots+1} p} -$$

$-\frac{\pi}{2p} \left(\frac{1-p^{2r}}{2}\right)^s \left(\frac{1-p^{2r_1}}{2}\right)^{s_1} \dots$

$$19) \int \frac{\cos^r x \cos^{r_1} x \dots \sin^t x \sin^{t_1} x \dots \cos\{(t+t_1+\dots)\frac{1}{2}\pi - (sr+s_1r_1+\dots+tu+t_1u_1+\dots)x\}}{1-2p\cos x+p^2} dx =$$

$$= \frac{\pi}{1-p^2} \left(\frac{1+p^{2r}}{2}\right)^r \left(\frac{1+p^{2r_1}}{2}\right)^{r_1} \dots \left(\frac{1-p^{2t}}{2}\right)^t \left(\frac{1-p^{2t_1}}{2}\right)^{t_1} \dots$$

$$20) \int \frac{\cos^r x \cos^{r_1} x \dots \sin^t x \sin^{t_1} x \dots \sin\{(t+t_1+\dots)\frac{1}{2}\pi - (sr+s_1r_1+\dots+tu+t_1u_1+\dots)x\}}{1-2p\cos x+p^2} dx =$$

$$= \frac{\pi}{2^{r+r_1+\dots+t+t_1+\dots+1}p} - \frac{\pi}{2p} \left(\frac{1+p^{2r}}{2}\right)^r \left(\frac{1+p^{2r_1}}{2}\right)^{r_1} \dots \left(\frac{1-p^{2t}}{2}\right)^t \left(\frac{1-p^{2t_1}}{2}\right)^{t_1} \dots$$

Sur 15) à 20) voyez Svanberg, N. A. Upsal. T. 10, 231.

$$21) \int \frac{\cos x \sin 2ax dx}{1+(p+q\sin x)^2} = -\frac{\pi}{q} \sin\left\{2a \operatorname{Arctg}\left(\sqrt{\frac{s}{2}}\right)\right\} \cdot \operatorname{Tg}^{2a}\left\{\frac{1}{2} \operatorname{Arccos}\left(\sqrt{\frac{s}{2p^2}}\right)\right\}$$

$$22) \int \frac{\cos x \cos\{(2a+1)x\} dx}{1+(p+q\sin x)^2} = \frac{\pi}{q} \cos\left\{(2a+1) \operatorname{Arctg}\left(\sqrt{\frac{s}{2}}\right)\right\} \cdot \operatorname{Tg}^{2a+1}\left\{\frac{1}{2} \operatorname{Arccos}\left(\sqrt{\frac{s}{2p^2}}\right)\right\}$$

Dans 21) et 22) on a $s = -(1+q^2-p^2) + \sqrt{\{(1+q^2-p^2)^2 + 4p^2\}}$ (IV, 138).

$$1) \int \frac{1}{1-2p\cos x+p^2} \frac{dx}{\cos x} = \infty [p^2 \leq 1] \text{ (VIII, 562).}$$

$$2) \int \frac{dx}{(1-2p\cos x+p^2)^{a+1}} = \frac{\pi}{(1-p^2)^{2a+1}} \sum_0^a \binom{a}{n} p^{2n} [p^2 < 1], = \frac{\pi}{(p^2-1)^{2a+1}} \sum_0^a \binom{a}{n} p^{2n} [p^2 > 1] \text{ (VIII, 482).}$$

$$3) \int \frac{\cos ax dx}{(1-2p\cos x+p^2)^{a+1}} = \frac{\pi p^a}{(1-p^2)^{2a+1}} \frac{(a+1)^{a/2}}{1^{a/2}} [p^2 < 1], = \frac{\pi p^a}{(p^2-1)^{2a+1}} \frac{(a+1)^{a/2}}{1^{a/2}} [p^2 > 1] \text{ (VIII, 483).}$$

$$4) \int \frac{\sin^{2a} x dx}{(1-2p\cos x+p^2)^a} = \frac{1^{a/2}}{2^{a/2}} \pi [p^2 < 1], = \frac{1^{a/2}}{2^{a/2}} \frac{\pi}{p^a} [p^2 > 1] \text{ (VIII, 432).}$$

$$5) \int \frac{\cos bx dx}{(1-2p\cos x+p^2)^{a+1}} = \frac{\pi p^b}{(1-p^2)^{2a+1}} \frac{(a+1)^{b/2}}{1^{b/2}} \sum_0^a \binom{a}{n} \frac{(a-b)^{n-1}}{(b+1)^{n/2}} p^{2n} [p^2 < 1], =$$

$$= \frac{\pi p^b}{(p^2-1)^{2a+1}} \frac{(a+1)^{b/2}}{1^{b/2}} \sum_0^a \binom{a}{n} \frac{(a-b)^{n-1}}{(b+1)^{n/2}} p^{2(a-n)} [p^2 > 1] \text{ (VIII, 483).}$$

$$6) \int \frac{1}{1-2p\cos x+p^2} \frac{dx}{1-2q\cos x+q^2} = \frac{\pi}{(1-p^2)(1-q^2)} \frac{1+pq}{1-pq} \left[\frac{p^2 \leq 1}{q^2 \leq 1} \right], = \frac{\pi}{(p^2-1)(q^2-1)} \frac{pq+1}{pq-1} \left[\frac{p^2 \geq 1}{q^2 \geq 1} \right] \text{ (VIII, 559).}$$

$$7) \int \frac{\sin^2 x}{1-2p \cos x + p^2} \frac{dx}{1-2q \cos x + q^2} = \frac{\pi}{2} \frac{1}{1-pq} \left[\frac{p^2}{q^2} \leq 1 \right], = \frac{\pi}{2pq} \frac{1}{pq-1} \left[\frac{p^2}{q^2} \geq 1 \right] \quad (\text{VIII, 559}).$$

$$8) \int \frac{\cos^2 x}{1-2p \cos x + p^2} \frac{dx}{1-2q \cos x + q^2} = \frac{\pi}{2} \frac{1+2pq+p^2+q^2-p^2q^2}{(1-pq)(1-p^2)(1-q^2)} \left[\frac{p^2}{q^2} \leq 1 \right], = \\ = \frac{\pi}{2pq} \frac{-1+2pq+p^2+q^2+p^2q^2}{(pq-1)(p^2-1)(q^2-1)} \left[\frac{p^2}{q^2} \geq 1 \right] \quad (\text{VIII, 559}).$$

$$9) \int \frac{\sin x}{p^2-2pq \cos x + q^2} \frac{\sin rx dx}{1-2p^r \cos rx + p^{2r}} = \frac{\pi}{2p^{r+1}} \frac{q^{r-1}}{1-q^r} \quad (\text{VIII, 635}).$$

$$10) \int \frac{p-q \cos x}{p^2-2pq \cos x + q^2} \frac{1-p^r \cos rx}{1-2p^r \cos rx + p^{2r}} dx = \frac{\pi}{2p} \frac{2-q^r}{1-q^r} \quad (\text{VIII, 635}).$$

$$11) \int \frac{\cos ax dx}{(1-2p_1 \cos x + p_1^2)^{l_1} (1-2p_2 \cos x + p_2^2)^{l_2} \dots (h \text{ fact.})} = \frac{\pi}{\Gamma(l_1)\Gamma(l_2)\dots} \frac{d^{l_1-1}}{d\eta_1^{l_1-1}} \frac{d^{l_2-1}}{d\eta_2^{l_2-1}} \dots \\ \dots \frac{\eta_1^{l_1-1} \eta_2^{l_2-1} \dots}{(1-\eta_1)^{l_1} (1-\eta_2)^{l_2} \dots} \left\{ Y_1 \left(\frac{\eta_1}{p_1} \right)^{h+a-1} + Y_2 \left(\frac{\eta_2}{p_2} \right)^{h+a-1} + \dots \right\} \\ \left[\text{où } Y_n = \frac{\left(1-\frac{\eta_1}{p_1}\right)^2 \left(1-\frac{\eta_2}{p_2}\right)^2 \dots \left(1-\frac{\eta_h}{p_h}\right)^2}{\left(1-\frac{\eta_n}{p_n}\right)^2 \times \left(\frac{\eta_n}{p_n} - \frac{\eta_1}{p_1}\right) \left(\frac{\eta_n}{p_n} - \frac{\eta_2}{p_2}\right) \dots \left(\frac{\eta_n}{p_n} - \frac{\eta_h}{p_h}\right)}; \text{ après} \right. \\ \left. \text{la différentiation changez } \eta_1, \eta_2 \dots \eta_h \text{ en } p_1^2, p_2^2, \dots p_h^2 \right] \quad (\text{IV, 141}).$$

$$1) \int \frac{dx}{\sqrt{3 \pm \cos x}} = F' \left(\sin \frac{\pi}{4} \right) \quad \text{V. T. 9, N. 8.}$$

$$2) \int \frac{\sin^{2a} x dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1^{a/2}}{2^{a/2}} \pi \sum_1 \frac{1^{n/2} (2a+1)^{n/2}}{2^{n/2} (2a+2)^{n/2}} p^{2n} [p^2 < 1], = \frac{1^{a/2}}{2^{a/2}} \frac{\pi}{\sqrt{1-p^2}} \sum_2 \frac{(1^{n/2})^2}{2^{n/2} (2a+2)^{n/2}} \\ \left(\frac{p^2}{p^2-1} \right)^n \left[p^2 < \frac{1}{2} \right] \quad (\text{IV, 142}).$$

$$3) \int \frac{dx}{\sqrt{p^2 - q^2 \cos x}} = \frac{2}{\sqrt{p^2 + q^2}} \frac{1}{p^2 - q^2} E' \left(\frac{q\sqrt{2}}{\sqrt{p^2 + q^2}} \right) \quad (\text{IV, 142}).$$

$$4) \int \frac{\cos x dx}{\sqrt{p^2 - q^2 \cos x}} = \frac{-2}{q^2 \sqrt{p^2 + q^2}} F' \left(\frac{q\sqrt{2}}{\sqrt{p^2 + q^2}} \right) - \frac{p^2 \sqrt{2}}{q(p^2 - q^2)} E' \left(\frac{q\sqrt{2}}{\sqrt{p^2 + q^2}} \right) \quad (\text{IV, 142}).$$

$$5) \int \frac{dx}{\sqrt{1 \pm 2p \cos x + p^2}} = 2 F'(p) [p < 1] \quad (\text{VIII, 315}).$$

$$6) \int \frac{\sin x dx}{\sqrt{1-2p \cos x + p^2}} = 2 [p^2 \leq 1], = \frac{2}{p} [p^2 \geq 1] \text{ (VIII, 211).}$$

$$7) \int \frac{\cos x dx}{\sqrt{1-2p \cos x + p^2}} = \frac{2}{p} \{F'(p) - E'(p)\} [p < 1] \text{ (VIII, 431).}$$

$$8) \int \frac{\sin^2 x dx}{\sqrt{1 \pm 2p \cos x + p^2}} = \frac{2}{p^2} \{F'(p) - E'(p)\} [p < 1] \text{ (VIII, 315).}$$

$$9) \int \frac{\cos ax dx}{\sqrt{1-2p \cos x + p^2}} = \frac{1^{a/2}}{2^{a/2}} \pi p^a \sum_1^{\infty} \frac{1^{n/2}}{2^{n/2}} \frac{(2a+1)^{n/2}}{(2a+2)^{n/2}} p^{2n} [p^2 < 1], = \frac{1^{a/2}}{2^{a/2}} \frac{\pi p^a}{\sqrt{1-p^2}} \\ \sum_0^{\infty} \frac{(1^{n/2})^2}{2^{n/2} (2a+2)^{n/2}} \left(\frac{p^2}{p^2-1}\right)^n [p^2 < \frac{1}{2}] \text{ (IV, 141).}$$

$$10) \int \frac{\sin x dx}{\sqrt{1-2p \cos x + p^2}} = \frac{2}{1-p^2} [p^2 < 1], = \frac{2}{p(p^2-1)} [p^2 > 1], = \infty [p^2 = 1] \text{ (VIII, 211).}$$

$$11) \int \frac{\sin x \cdot \cos x dx}{\sqrt{1-2p \cos x + p^2}} = \frac{2p}{1-p^2} [p^2 < 1], = \frac{2}{p^2(p^2-1)} [p^2 > 1], = \infty [p^2 = 1] \text{ (VIII, 212*)}.$$

$$1) \int \cos \{ax - p \cos x - q \sin x\} dx = 2\pi \cos \left(a \operatorname{Arctg} \frac{q}{p} \right) \frac{(p^2 + q^2)^{1/2}}{2^a 1^{a/2}} \left\{ 1 + \sum_1^{\infty} \frac{(-1)^n}{1^{n/2} (1+a)^{n/2}} \right. \\ \left. \left(\frac{p^2 + q^2}{4} \right)^n \right\} \text{ (IV, 143).}$$

$$2) \int \cos \{a(x - q \sin x)\} \cdot \cos x dx = \frac{2\pi}{q} \frac{(\frac{1}{2} a q)^a}{1^{a/2}} \left\{ 1 + \sum_1^{\infty} (-1)^n \frac{(\frac{1}{2} a q)^{2n}}{1^{n/2} (1+a)^{n/2}} \right\} \text{ (IV, 143).}$$

$$3) \int \sin \{p \cos x + q \sin x\} \cdot \sin 2ax dx = 0 = 4) \int \cos \{p \cos x + q \sin x\} \cdot \cos \{(2a+1)x\} dx \\ \text{ (IV, 143).}$$

$$5) \int \sin \{p \cos x + q \sin x\} \cdot \sin \{(2a-1)x\} dx = 2\pi \cos \left\{ (2a-1) \operatorname{Arctg} \frac{q}{p} \right\} \frac{\sqrt{p^2 + q^2}^{2a-1}}{2^{2a-1} 1^{2a-1/2}} \\ \left\{ 1 + \sum_1^{\infty} (-1)^n \frac{(p^2 + q^2)^n}{2^{2n} 1^{n/2} (2a)^{n/2}} \right\} \text{ (IV, 143).}$$

$$6) \int \cos \{p \cos x + q \sin x\} \cdot \cos 2ax dx = 2\pi \cos \left(2a \operatorname{Arctg} \frac{q}{p} \right) \frac{(p^2 + q^2)^a}{2^{2a} 1^{2a/2}} \left\{ 1 + \sum_1^{\infty} (-1)^n \right. \\ \left. \frac{(p^2 + q^2)^n}{2^{2n} 1^{n/2} (2a+1)^{n/2}} \right\} \text{ (IV, 143).}$$

$$7) \int \cos (p \sin x) \cdot \cos^{2a} x dx = \frac{1^{a/2} \pi}{2^{a-1} 1^{a/2}} \left\{ 1 + \sum_1^{\infty} \frac{(-1)^n}{1^{n/2} (a+1)^{n/2}} \left(\frac{p}{2} \right)^{2n} \right\} \text{ (IV, 143).}$$

$$8) \int (p \sin x + q \cos x)^{2a} dx = \frac{1^{a/2}}{2^{a/2}} 2\pi (p^2 + q^2)^a \text{ (VIII, 429).}$$

$$9) \int (p \sin x + q \cos x)^{2a+1} dx = 0 \text{ (VIII, 429) = } 10) \int (1 - \cos x)^a \sin ax dx \text{ (C. Math. J. V. 3, 144).}$$

$$11) \int (1 - \cos x)^a \cos ax dx = (-1)^a \frac{\pi}{2^{a-1}} \text{ (C. Math. Journ. V. 3, 144).}$$

$$12) \int \frac{p - \cos(x-\lambda) \cdot \sqrt{p^2-1}}{\{q - \cos x \cdot \sqrt{q^2-1}\}^2} dx = 2\pi \{pq - \cos \lambda \cdot \sqrt{(p^2-1)(q^2-1)}\} \text{ (VIII, 314).}$$

$$13) \int \frac{\sin ax - p \sin \{(a+1)x\}}{1 - 2p \cos x + p^2} dx = 0 \text{ } [p^2 < 1] \text{ (VIII, 483).}$$

$$14) \int \frac{\cos ax - p \cos \{(a+1)x\}}{1 - 2p \cos x + p^2} dx = 2\pi p^a \text{ } [p^2 < 1] \text{ (VIII, 483).}$$

$$15) \int \frac{dx}{1 - (p+qi) \cos x - (r+si) \sin x} = 0 \text{ } [(ps-qr)^2 > q^2+s^2], = \frac{2\pi}{\sqrt{1-bc}} [(ps-qr)^2 < q^2+s^2] \text{ (VIII, 481*)}.$$

$$16) \int \frac{\sin x dx}{1 - (p+qi) \cos x - (r+si) \sin x} = \frac{2\pi i}{b} [(ps-qr)^2 > q^2+s^2], = \frac{\pi i}{\sqrt{1-bc}} \frac{b-c}{1+\sqrt{1-bc}} \text{ } [(ps-qr)^2 < q^2+s^2] \text{ (VIII, 481).}$$

$$17) \int \frac{\cos x dx}{1 - (p+qi) \cos x - (r+si) \sin x} = -\frac{2\pi}{b} [(ps-qr)^2 > q^2+s^2], = \frac{\pi}{\sqrt{1-bc}} \frac{b+c}{1+\sqrt{1-bc}} \text{ } [(ps-qr)^2 < q^2+s^2] \text{ (VIII, 481).}$$

$$18) \int \frac{\sin ax dx}{1 - (p+qi) \cos x - (r+si) \sin x} = \frac{\pi i}{\sqrt{1-bc}} \frac{\{1+\sqrt{1-bc}\}^a - \{1-\sqrt{1-bc}\}^a}{b^a} \text{ } [(ps-qr)^2 > q^2+s^2], = \frac{\pi i}{\sqrt{1-bc}} \frac{b^a - c^a}{\{1+\sqrt{1-bc}\}^a} \text{ } [(ps-qr)^2 < q^2+s^2] \text{ (VIII, 482).}$$

$$19) \int \frac{\cos ax dx}{1 - (p+qi) \cos x - (r+si) \sin x} = \frac{\pi}{\sqrt{1-bc}} \frac{\{1-\sqrt{1-bc}\}^a - \{1+\sqrt{1-bc}\}^a}{b^a} \text{ } [(ps-qr)^2 > q^2+s^2], = \frac{\pi}{\sqrt{1-bc}} \frac{b^a + c^a}{\{1+\sqrt{1-bc}\}^a} \text{ } [(ps-qr)^2 < q^2+s^2] \text{ (VIII, 481).}$$

Dans 14) à 19) on a $ps > qr$, $b = p+s+(q-r)i$, $c = p-s+(q+r)i$, $\sqrt{1-bc}$ positive.

$$20) \int \frac{dx}{p+qi - (r+si) \cos x - (t+ui) \sin x} = 0 \text{ } [(ru-st)^2 > (ps-qr)^2 + (pu-qt)^2]$$

(IV, 146).

$$21) \int \frac{dx}{(a + b i \cos x + c i \sin x)^2} = \frac{2a\pi}{\sqrt{a^2 + b^2 + c^2}} \text{ (IV, 147).}$$

$$22) \int \frac{dx}{\sqrt{p+q} \cos x} = \frac{4}{\sqrt{p+q}} F' \left(\sqrt{\frac{2q}{p+q}} \right) = \quad 23) \int \frac{dx}{\sqrt{p-q} \cos x} \text{ (VIII, 330).}$$

$$24) \int \frac{\cos x dx}{\sqrt{p+q} \cos x} = \frac{4}{q} \sqrt{p+q} \cdot E' \left(\sqrt{\frac{2q}{p+q}} \right) - \frac{4p}{q \sqrt{p+q}} F' \left(\sqrt{\frac{2q}{p+q}} \right) \text{ (VIII, 330).}$$

$$25) \int \frac{\cos x dx}{\sqrt{p-q} \cos x} = \frac{4p}{q \sqrt{p+q}} F' \left(\sqrt{\frac{2q}{p+q}} \right) - \frac{4}{q} \sqrt{p+q} \cdot E' \left(\sqrt{\frac{2q}{p+q}} \right) \text{ (VIII, 330).}$$

$$26) \int \frac{dx}{\sqrt{p+q} \cos x} = \frac{4 \sqrt{p+q}}{p^2 - q^2} E' \left(\sqrt{\frac{2q}{p+q}} \right) \text{ (IV, 147).}$$

$$1) \int_{-\frac{1}{2}\pi}^{\frac{1}{2}\pi} \cos^p x \cdot \sin qx dx = 0 \text{ (VIII, 532).}$$

$$2) \int_{-\frac{1}{2}\pi}^{\frac{1}{2}\pi} \cos^p x \cdot \cos qx dx = \frac{\pi \Gamma(p+1)}{2^p \Gamma\left(\frac{p+q}{2} + 1\right) \Gamma\left(\frac{p-q}{2} + 1\right)} \text{ (VIII, 532).}$$

$$3) \int_{-\frac{1}{2}\pi}^{\frac{1}{2}\pi} \cos^p x \cdot \sin\left(\frac{1}{2}q\pi - qx\right) dx = \frac{\pi}{2^p} \sin \frac{1}{2}q\pi \frac{\Gamma(p+1)}{\Gamma\left(\frac{p+q}{2} + 1\right) \Gamma\left(\frac{p-q}{2} + 1\right)} \text{ (VIII, 532).}$$

$$4) \int_{-\frac{1}{2}\pi}^{\frac{1}{2}\pi} \cos^p x \cdot \cos\left(\frac{1}{2}q\pi - qx\right) dx = \frac{\pi}{2^p} \cos \frac{1}{2}q\pi \frac{\Gamma(p+1)}{\Gamma\left(\frac{p+q}{2} + 1\right) \Gamma\left(\frac{p-q}{2} + 1\right)} \text{ (VIII, 532).}$$

$$5) \int_{-\frac{1}{2}\pi}^{\frac{1}{2}\pi} \cos^p x \cdot \cos\{q(x-\lambda)\} dx = \frac{\pi}{2^p} \cos q\lambda \frac{\Gamma(p+1)}{\Gamma\left(\frac{p+q}{2} + 1\right) \Gamma\left(\frac{p-q}{2} + 1\right)} \text{ V.T. 69, N. 3, 4.}$$

$$6) \int_{-\frac{1}{2}\pi}^{\frac{1}{2}\pi} \frac{\cos^{a+1} x \cdot \cos\{(a+1)x\}}{1 - p^2 \cos^2 x} dx = \frac{2\pi}{a} \frac{d}{dp} \cdot \left\{ \frac{1 - \sqrt{1-p}}{p} \right\}^a [p < 1] \text{ Russell, Phil. Trans. 1855.}$$

$$7) \int_{\frac{q\pi}{a}}^{\frac{p\pi}{a}} \frac{\sin bx dx}{\sin ax} = \frac{1}{a} \sum_1^{a-1} (-1)^{n-1} \sin \frac{nb\pi}{a} \cdot \frac{\Gamma\left(\frac{a+n+p}{2a}\right) \Gamma\left(\frac{a+n-p}{2a}\right) \Gamma\left(\frac{n+q}{2a}\right) \Gamma\left(\frac{n-p}{2a}\right)}{\Gamma\left(\frac{a+n+q}{2a}\right) \Gamma\left(\frac{a+n-q}{2a}\right) \Gamma\left(\frac{n+p}{2a}\right) \Gamma\left(\frac{n-q}{2a}\right)}$$

$$\left[\begin{matrix} a+b \\ \text{impair} \end{matrix} \right] = \frac{1}{a} \sum_1^{a-1} (-1)^{n-1} \sin \frac{nb\pi}{a} \cdot \frac{\Gamma\left(\frac{a-n+p}{a}\right) \Gamma\left(\frac{a-n-p}{a}\right) \Gamma\left(\frac{n+q}{a}\right) \Gamma\left(\frac{n-p}{a}\right)}{\Gamma\left(\frac{a-n+q}{a}\right) \Gamma\left(\frac{a-n-q}{a}\right) \Gamma\left(\frac{n+p}{a}\right) \Gamma\left(\frac{n-q}{a}\right)}$$

$$\left[\begin{matrix} a+b \\ \text{pair} \end{matrix} \right] [1 > p > q > -1] \text{ Lindmann, Gr. 35, 475.}$$

$$8) \int_0^{a\pi} \frac{dx}{p+q \cos x} = \frac{a\pi}{p\sqrt{1-\frac{q^2}{p^2}}} [p^2 > q^2], = 0 [p^2 < q^2] \text{ (VIII, 206).}$$

$$9) \int_0^{(a+\frac{1}{2})\pi} \frac{dx}{p+q \cos x} = \frac{a\pi + \operatorname{Arccos}\left(\frac{q}{p}\right)}{p\sqrt{1-\frac{q^2}{p^2}}} [p^2 > q^2], = \frac{1}{\sqrt{q^2-p^2}} \ell \frac{q + \sqrt{q^2-p^2}}{p} [p^2 < q^2] \text{ (VIII, 206).}$$

$$10) \int_0^{a\pi} \frac{dx}{(p+q \cos x)^2} = \frac{ap\pi}{\sqrt{p^2-q^2}^3} [p^2 > q^2], = 0 [p^2 < q^2] \text{ (VIII, 208).}$$

$$11) \int_0^{(a+\frac{1}{2})\pi} \frac{dx}{(p+q \cos x)^2} = \frac{-q \cos a\pi}{p(p^2-q^2)} + p \frac{a\pi + \operatorname{Arccos}\left(\frac{q}{p}\right)}{\sqrt{p^2-q^2}^3} [p^2 > q^2], = \frac{q \cos a\pi}{p(q^2-p^2)} + \frac{p}{\sqrt{q^2-p^2}^3} \ell \frac{p}{q + \sqrt{q^2-p^2}} [p^2 < q^2] \text{ (VIII, 325*)}.$$

$$12) \int_0^{a\pi} \frac{\cos x dx}{(p+q \cos x)^2} = \frac{1}{q^2-p^2} \frac{qa\pi}{p\sqrt{1-\frac{q^2}{p^2}}} [p^2 > q^2], = 0 [p^2 < q^2] \text{ (VIII, 325).}$$

$$13) \int_0^{(a+\frac{1}{2})\pi} \frac{\cos x dx}{(p+q \cos x)^2} = \frac{1}{p^2-q^2} \left\{ \frac{-aq\pi}{p\sqrt{1-\frac{q^2}{p^2}}} + \cos a\pi - \frac{q}{p\sqrt{1-\frac{q^2}{p^2}}} \operatorname{Arccos} \frac{q}{p} \right\} [p^2 > q^2], = \frac{1}{q^2-p^2} \left\{ \cos a\pi + \frac{q}{\sqrt{q^2-p^2}} \ell \frac{q + \sqrt{q^2-p^2}}{p} \right\} [p^2 < q^2] \text{ (VIII, 325*)}.$$

$$14) \int_0^{a\pi} \frac{p \cos x + q}{(p+q \cos x)^2} dx = 0 \text{ (VIII, 325).}$$

$$15) \int_0^{(a+\frac{1}{2})\pi} \frac{p \cos x + q}{(p+q \cos x)^2} dx = \frac{1}{p} \cos a\pi \text{ (VIII, 325*)}.$$

$$16) \int_0^{r\pi} \frac{p \cos x + q}{(p+q \cos x)^2} dx = \frac{\sin r\pi}{p+q \cos r\pi} \text{ (VIII, 325).}$$

$$17) \int_0^{2a\pi} \frac{dx}{p+q \cos x + r \sin x} = \frac{2a\pi}{p\sqrt{1-\frac{q^2+r^2}{p^2}}} [p^2 > q^2+r^2], = 0 [p^2 < q^2+r^2] \text{ (VIII, 210).}$$

$$18) \int_0^{(2a-\frac{1}{2})\pi} \frac{dx}{p+q \cos x + r \sin x} = \frac{2}{p\sqrt{1-\frac{q^2+r^2}{p^2}}} \left\{ a\pi - \operatorname{Arctg} \left(\frac{\sqrt{p^2-q^2-r^2}}{p+q-r} \right) \right\} [p^2 > q^2+r^2], = \frac{1}{2\sqrt{q^2+r^2-p^2}} \ell \left\{ \frac{p+q-r-\sqrt{q^2+r^2-p^2}}{p+q-r+\sqrt{q^2+r^2-p^2}} \right\}^2 [p^2 < q^2+r^2] \text{ (VIII, 208, 210).}$$

$$19) \int_0^{(2a+\frac{1}{2})\pi} \frac{dx}{p+q \cos x + r \sin x} = \frac{2}{p\sqrt{1-\frac{q^2+r^2}{p^2}}} \left\{ a\pi + \operatorname{Arctg} \left(\frac{\sqrt{p^2-q^2-r^2}}{p+q+r} \right) \right\} [p^2 > q^2+r^2], =$$

$$= \frac{1}{2\sqrt{q^2+r^2-p^2}} \ln \left\{ \frac{p+q+r+\sqrt{q^2+r^2-p^2}}{p+q+r-\sqrt{q^2+r^2-p^2}} \right\}^2 [p^2 < q^2+r^2] \text{ (VIII, 208, 210).}$$

$$20) \int_0^{(2a+1)\pi} \frac{dx}{p+q \cos x + r \sin x} = \frac{2}{p\sqrt{1-\frac{q^2+r^2}{p^2}}} \left\{ a\pi + \operatorname{Arctg} \left(\sqrt{\frac{p^2-q^2-r^2}{r^2}} \right) \right\} \left[\begin{matrix} p^2 > q^2+r^2, \\ r > 0 \end{matrix} \right], =$$

$$= \frac{2}{p\sqrt{1-\frac{q^2+r^2}{p^2}}} \left\{ (a+1)\pi - \operatorname{Arctg} \left(\sqrt{\frac{p^2-q^2-r^2}{r^2}} \right) \right\} \left[\begin{matrix} p^2 > q^2+r^2, \\ r < 0 \end{matrix} \right], =$$

$$= \frac{1}{2\sqrt{q^2+r^2-p^2}} \ln \left\{ \frac{r-\sqrt{q^2+r^2-p^2}}{r+\sqrt{q^2+r^2-p^2}} \right\}^2 [p^2 < q^2+r^2] \text{ (VIII, 209, 210).}$$

$$21) \int_0^{2a\pi} \frac{dx}{(p+q \cos x + r \sin x)^2} = \frac{2ap\pi}{\sqrt{p^2-q^2-r^2}^3} [p^2 > q^2+r^2], = 0 [p^2 < q^2+r^2] \text{ (VIII, 211*)}.$$

$$22) \int_0^{(2a-\frac{1}{2})\pi} \frac{dx}{(p+q \cos x + r \sin x)^2} = \frac{q^2-r^2+p(q-r)}{(p+q)(p+r)(p^2-q^2-r^2)} + \frac{2p}{\sqrt{p^2-q^2-r^2}^3} \left\{ a\pi - \operatorname{Arctg} \left(\frac{\sqrt{p^2-q^2-r^2}}{p+q-r} \right) \right\}$$

$$[p^2 > q^2+r^2], = \frac{r^2-q^2+p(r-q)}{(p+q)(p+r)(q^2+r^2-p^2)} + \frac{p}{2\sqrt{q^2+r^2-p^2}^3} \ln \left\{ \frac{p+q-r-\sqrt{q^2+r^2-p^2}}{p+q-r+\sqrt{q^2+r^2-p^2}} \right\}^2$$

$$[p^2 < q^2+r^2] \text{ (VIII, 211*)}.$$

$$23) \int_0^{(2a+\frac{1}{2})\pi} \frac{dx}{(p+q \cos x + r \sin x)^2} = \frac{-[q^2+r^2+p(q+r)]}{(p+q)(p+r)(p^2-q^2-r^2)} + \frac{2p}{\sqrt{p^2-q^2-r^2}^3} \left\{ a\pi + \operatorname{Arctg} \left(\frac{\sqrt{p^2-q^2-r^2}}{p+q+r} \right) \right\}$$

$$[p^2 > q^2+r^2], = \frac{q^2+r^2+p(q+r)}{(p+q)(p+r)(q^2+r^2-p^2)} + \frac{p}{2\sqrt{q^2+r^2-p^2}^3} \ln \left\{ \frac{p+q+r-\sqrt{q^2+r^2-p^2}}{p+q+r+\sqrt{q^2+r^2-p^2}} \right\}^2$$

$$[p^2 < q^2+r^2] \text{ (VIII, 211*)}.$$

$$24) \int_0^{(2a+1)\pi} \frac{dx}{(p+q \cos x + r \sin x)^2} = \frac{2pr}{(q^2-p^2)(p^2-q^2-r^2)} + \frac{2p}{\sqrt{p^2-q^2-r^2}^3} \left\{ a\pi + \operatorname{Arctg} \left(\sqrt{\frac{p^2-q^2-r^2}{r^2}} \right) \right\}$$

$$\left[\begin{matrix} p^2 > q^2+r^2, \\ r > 0 \end{matrix} \right], = \frac{2pr}{(p^2-q^2)(q^2+r^2-p^2)} + \frac{2p}{\sqrt{p^2-q^2-r^2}^3} \left\{ (a+1)\pi - \operatorname{Arctg} \left(\sqrt{\frac{p^2-q^2-r^2}{r^2}} \right) \right\}$$

$$\left[\begin{matrix} p^2 > q^2+r^2, \\ r < 0 \end{matrix} \right], = \frac{2pr}{(p^2-q^2)(q^2+r^2-p^2)} + \frac{p}{2\sqrt{q^2+r^2-p^2}^3} \ln \left\{ \frac{r-\sqrt{q^2+r^2-p^2}}{r+\sqrt{q^2+r^2-p^2}} \right\}^2$$

$$[p^2 < q^2+r^2] \text{ (VIII, 211*)}.$$

$$25) \int_0^{2a\pi} \frac{dx}{(p+q \cos x + r \sin x)^2} = \frac{2p^2+q^2+r^2}{p\sqrt{1-\frac{q^2+r^2}{p^2}}} a\pi [p^2 > q^2+r^2], = 0 [p^2 < q^2+r^2] \text{ (IV, 150).}$$

$$26) \int_0^{2a\pi} \frac{dx}{(p+q \cos x + r \sin x)^2} = \frac{2p^2+3(q^2+r^2)}{\sqrt{p^2-q^2-r^2}^3} p a\pi [p^2 > q^2+r^2], = 0 [p^2 < q^2+r^2] \text{ (IV, 150).}$$

$$1) \int \sin(qx^2) dx = \frac{1}{2} \sqrt{\frac{\pi}{2q}} = \quad 2) \int \cos(qx^2) dx \text{ (VIII, 442).}$$

$$3) \int \sin(qx^2 \pm 2px) dx = \left(\cos \frac{p^2}{q} - \sin \frac{p^2}{q} \right) \frac{1}{2} \sqrt{\frac{\pi}{2q}} \text{ (VIII, 443).}$$

$$4) \int \cos(qx^2 \pm 2px) dx = \left(\cos \frac{p^2}{q} + \sin \frac{p^2}{q} \right) \frac{1}{2} \sqrt{\frac{\pi}{2q}} \text{ (VIII, 443).}$$

$$5) \int \sin\left(qx^2 \pm 2px + \frac{p^2}{q}\right) dx = \frac{1}{2} \sqrt{\frac{\pi}{2q}} = \quad 6) \int \cos\left(qx^2 \pm 2px + \frac{p^2}{q}\right) dx \text{ (VIII, 442).}$$

$$7) \int \sin(px^q + rx^s) dx = \frac{1}{q} \sum_0^{\infty} \frac{(-r)^n}{1^{n/1}} \frac{1}{(\sqrt[p]{p})^{n+1}} \Gamma\left(\frac{ns+1}{q}\right) \sin\left\{\frac{n(s-q)+1}{2q} \pi\right\}$$

$$8) \int \cos(px^q + rx^s) dx = \frac{1}{q} \sum_0^{\infty} \frac{(-r)^n}{1^{n/1}} \frac{1}{(\sqrt[p]{p})^{n+1}} \Gamma\left(\frac{ns+1}{q}\right) \cos\left\{\frac{n(s-q)+1}{2q} \pi\right\}$$

Sur 7) et 8) voyez De Morgan, Int. Calc.

$$9) \int \sin^{2a+1}(px^2) dx = \frac{1}{2^{2a+1}} \sum_0^a (-1)^{n+a} \binom{2a+1}{n} \sqrt{\frac{\pi}{2p(2a+1-2n)}} \text{ (VIII, 476).}$$

$$10) \int \cos^{2a+1}(px^2) dx = \frac{1}{2^{2a+1}} \sum_0^a \binom{2a+1}{n} \sqrt{\frac{\pi}{2p(2a+1-2n)}} \text{ (VIII, 476).}$$

$$11) \int \sin(qx^2) \cdot \sin 2px dx = 0 = \quad 12) \int \cos(qx^2) \cdot \sin 2px dx \text{ (VIII, 443).}$$

$$13) \int \sin(qx^2) \cdot \cos 2px dx = \frac{1}{2} \left(\cos \frac{p^2}{q} - \sin \frac{p^2}{q} \right) \sqrt{\frac{\pi}{2q}} \text{ (VIII, 443).}$$

$$14) \int \cos(qx^2) \cdot \cos 2px dx = \frac{1}{2} \left(\cos \frac{p^2}{q} + \sin \frac{p^2}{q} \right) \sqrt{\frac{\pi}{2q}} \text{ (VIII, 443).}$$

$$15) \int \sin(q^2 + x^2) \cdot \cos 2qx dx = \frac{1}{4} \sqrt{2\pi} = \quad 16) \int \cos(q^2 + x^2) \cdot \cos 2qx dx \text{ V. T. 70, N. 13, 14.}$$

$$17) \int \sin\left(qx^2 + \frac{p^2}{q}\right) \cdot \sin 2px dx = 0 = \quad 18) \int \cos\left(qx^2 + \frac{p^2}{q}\right) \cdot \sin 2px dx \text{ (VIII, 443).}$$

$$19) \int \sin\left(qx^2 + \frac{p^2}{q}\right) \cdot \cos 2px dx = \frac{1}{2} \sqrt{\frac{\pi}{2q}} = \quad 20) \int \cos\left(qx^2 + \frac{p^2}{q}\right) \cdot \cos 2px dx \text{ (VIII, 443).}$$

$$21) \int \sin qx \cdot \cos(2p\sqrt{x}) dx = 0 = \quad 22) \int \cos qx \cdot \cos(2p\sqrt{x}) dx \text{ V. T. 70, N. 11, 12.}$$

$$23) \int \sin qx \cdot \sin(2p\sqrt{x}) dx = \left(\sin \frac{p^2}{q} + \cos \frac{p^2}{q} \right) \frac{p}{q} \sqrt{\frac{\pi}{2q}} \text{ (VIII, 443).}$$

$$24) \int \cos qx \cdot \sin(2p \sqrt{x}) dx = \left(\sin \frac{p^2}{q} - \cos \frac{p^2}{q} \right) \frac{p}{q} \sqrt{\frac{\pi}{2q}} \text{ (VIII, 443).}$$

$$25) \int \sin \left(p^2 x^2 - 2pq + \frac{q^2}{x^2} \right) dx = \frac{1}{4p} \sqrt{2\pi} = 26) \int \cos \left(p^2 x^2 - 2pq + \frac{q^2}{x^2} \right) dx \text{ (VIII, 427).}$$

$$27) \int \sin \left(p^2 x^2 + \frac{q^2}{x^2} \right) dx = \frac{1}{4p} (\cos 2pq + \sin 2pq) \sqrt{2\pi} \text{ (VIII, 427).}$$

$$28) \int \cos \left(p^2 x^2 + \frac{q^2}{x^2} \right) dx = \frac{1}{4p} (\cos 2pq - \sin 2pq) \sqrt{2\pi} \text{ (VIII, 427).}$$

$$29) \int \frac{dx}{\cos \{(q - p^2)x\}} = \frac{\pi}{2(p + q^2)} \text{ (VIII, 297).}$$

$$30) \int \frac{\sin qx - p \sin \{(q - r)x\}}{1 - 2p \cos rx + p^2} dx = \sum_{n=0}^{\infty} \frac{p^n}{nr + q} \left. \begin{array}{l} \\ \end{array} \right\} \text{Poisson, P. 20, 222.}$$

$$31) \int \frac{\cos qx - p \cos \{(q - r)x\}}{1 - 2p \cos rx + p^2} dx = 0$$

$$1) \int \sin \{(a+1)x\} \cdot \sin^{a-1} x dx = \frac{1}{a} \sin^a \lambda \cdot \sin a \lambda$$

$$2) \int \sin \{(a+1)x\} \cdot \cos^{a-1} x dx = \frac{1}{\lambda} (1 - \cos^a \lambda \cdot \cos a \lambda)$$

$$3) \int \cos \{(a+1)x\} \cdot \sin^{a-1} x dx = \frac{1}{a} \sin^a \lambda \cdot \cos a \lambda$$

$$4) \int \cos \{(a+1)x\} \cdot \cos^{a-1} x dx = \frac{1}{\lambda} \cos^a \lambda \cdot \sin a \lambda$$

$$5) \int \sin \left\{ (a+1) \left(\frac{\pi}{2} - x \right) \right\} \cdot \sin^{a-1} x dx = \frac{1}{a} \sin^a \lambda \cdot \cos \left\{ a \left(\frac{\pi}{2} - \lambda \right) \right\}$$

$$6) \int \cos \left\{ (a+1) \left(\frac{\pi}{2} - x \right) \right\} \cdot \sin^{a-1} x dx = -\frac{1}{a} \sin^a \lambda \cdot \sin \left\{ a \left(\frac{\pi}{2} - \lambda \right) \right\}$$

Lindmann, Gr. 38, 246.

$$7) \int \frac{dx}{\sqrt{\cos^2 x - \cos^2 \lambda}} = F'(\sin \lambda) \text{ (IV, 159).}$$

$$8) \int \frac{\sin x dx}{\sqrt{\cos^2 x - \cos^2 \lambda}} = \frac{1}{2} \left(\frac{1 + \sin \lambda}{1 - \sin \lambda} \right) \text{ (VIII, 307).}$$

$$9) \int \frac{\cos^2 x dx}{\sqrt{\cos^2 x - \cos^2 \lambda}} = E'(\sin \lambda) \text{ (IV, 159).}$$

$$10) \int \frac{\sin^2 x dx}{\sqrt{\cos^2 x - \cos^2 \lambda}} = \frac{1 + \sin^2 \lambda}{4} \left[\frac{1 + \sin \lambda}{1 - \sin \lambda} - \frac{1}{2} \sin \lambda \right] \text{ (IV, 159).}$$

$$11) \int \frac{dx}{\cos^2 x \cdot \sqrt{\cos^2 x - \cos^2 \lambda}} = \sec^2 \lambda \cdot E'(\sin \lambda) \text{ (IV, 159).}$$

$$12) \int \frac{dx}{\sqrt{(\cos^2 x - \cos^2 \lambda)(1 - \cos^2 \mu \cdot \cos^2 x)}} = \frac{1}{\sqrt{1 - \cos^2 \lambda \cdot \cos^2 \mu}} F' \left(\frac{\sin \lambda}{\sqrt{1 - \cos^2 \lambda \cdot \cos^2 \mu}} \right) \text{ (VIII, 312).}$$

$$13) \int \frac{\sin x dx}{\sqrt{(\cos^2 x - \cos^2 \lambda)(1 - \cos^2 \mu \cdot \cos^2 x)}} = F \left\{ \sqrt{1 - \cos^2 \lambda \cdot \cos^2 \mu}, \operatorname{Arccot}(\sin \mu \cdot \cot \lambda) \right\} \text{ (IV, 159).}$$

$$14) \int \frac{\sin x \cdot \cos x dx}{\sqrt{(\cos^2 x - \cos^2 \lambda)(1 - \cos^2 \mu \cdot \cos^2 x)}} = \sec \mu \cdot \operatorname{Arctg}(\sin \lambda \cdot \cot \mu) \text{ (IV, 159).}$$

$$15) \int \frac{\cos^2 x dx}{\sqrt{(\cos^2 x - \cos^2 \lambda)(1 - \cos^2 \mu \cdot \cos^2 x)}} = \frac{\cos^2 \lambda}{\sqrt{1 - \cos^2 \lambda \cdot \cos^2 \mu}} F' \left(\frac{\sin \lambda}{\sqrt{1 - \cos^2 \lambda \cdot \cos^2 \mu}} \right) + \\ + \sec \mu \cdot \left\{ F' \left(\frac{\sin \lambda}{\sqrt{1 - \cos^2 \lambda \cdot \cos^2 \mu}} \right) \cdot E \left(\frac{\sin \lambda}{\sqrt{1 - \cos^2 \lambda \cdot \cos^2 \mu}}, \operatorname{Arccos}(\cos \lambda \cdot \cos \mu) \right) - \right. \\ \left. - E' \left(\frac{\sin \lambda}{\sqrt{1 - \cos^2 \lambda \cdot \cos^2 \mu}} \right) \cdot F \left(\frac{\sin \lambda}{\sqrt{1 - \cos^2 \lambda \cdot \cos^2 \mu}}, \operatorname{Arccos}(\cos \lambda \cdot \cos \mu) \right) \right\} \text{ (IV, 159).}$$

$$16) \int \frac{\sin x \cdot \cos^2 x dx}{\sqrt{(\cos^2 x - \cos^2 \lambda)(1 - \cos^2 \mu \cdot \cos^2 x)}} = \sec^2 \mu \cdot E \left(\sqrt{1 - \cos^2 \lambda \cdot \cos^2 \mu}, \operatorname{Arccot}(\sin \mu \cdot \cot \lambda) \right) - \\ - \sin \lambda \cdot \sin \mu \cdot \sec^2 \mu \text{ (IV, 159).}$$

$$17) \int \frac{\sin x \cdot \cos^3 x dx}{\sqrt{(\cos^2 x - \cos^2 \lambda)(1 - \cos^2 \mu \cdot \cos^2 x)}} = \frac{1 + \cos^2 \lambda \cdot \cos^2 \mu}{2 \cos^2 \mu} \operatorname{Arctg}(\sin \lambda \cdot \cot \mu) - \frac{\sin \mu \cdot \sin \lambda}{2 \cos^2 \mu} \text{ (IV, 159).}$$

$$18) \int \frac{\sin x dx}{\cos x \cdot \sqrt{(\cos^2 x - \cos^2 \lambda)(1 - \cos^2 \mu \cdot \cos^2 x)}} = \sec \lambda \cdot \operatorname{Arccot}(\sin \mu \cdot \cot \lambda) \text{ (IV, 159).}$$

$$19) \int \frac{dx}{\cos^2 x \cdot \sqrt{(\cos^2 x - \cos^2 \lambda)(1 - \cos^2 \mu \cdot \cos^2 x)}} = \frac{\cos^2 \mu}{\sqrt{1 - \cos^2 \lambda \cdot \cos^2 \mu}} F' \left(\frac{\sin \lambda}{\sqrt{1 - \cos^2 \lambda \cdot \cos^2 \mu}} \right) + \\ + \sec^2 \lambda \cdot \sqrt{1 - \cos^2 \lambda \cdot \cos^2 \mu} \cdot E' \left(\frac{\sin \lambda}{\sqrt{1 - \cos^2 \lambda \cdot \cos^2 \mu}} \right) \text{ (IV, 159).}$$

$$20) \int \frac{\sin x dx}{\cos^2 x \cdot \sqrt{(\cos^2 x - \cos^2 \lambda)(1 - \cos^2 \mu \cdot \cos^2 x)}} = \sec^2 \lambda \cdot E \left\{ \sqrt{1 - \cos^2 \lambda \cdot \cos^2 \mu}, \operatorname{Arccot}(\sin \mu \cdot \cot \lambda) \right\} \text{ (IV, 159).}$$

$$21) \int \frac{\sin x dx}{\cos^2 x \cdot \sqrt{(\cos^2 x - \cos^2 \lambda)(1 - \cos^2 \mu \cdot \cos^2 x)}} = \frac{1 + \cos^2 \lambda \cdot \cos^2 \mu}{2 \cos^2 \lambda} \operatorname{Arccot}(\sin \mu \cdot \cot \lambda) + \\ + \frac{\sin \mu \cdot \sin \lambda}{2 \cos^2 \lambda} \text{ (IV, 159).}$$

$$22) \int \frac{\cos \frac{1}{2} x}{1 - 2p \cos x + p^2} \frac{dx}{\sqrt{2(\cos x - \cos \lambda)}} = \frac{\pi}{2(1-p) \sqrt{1 - 2p \cos \lambda + p^2}} \text{ (IV, 159).}$$

$$1) \int \sin x \cdot \cos x dx \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)} = \frac{\pi}{16} (\sin^2 \mu - \sin^2 \lambda)^2 \quad (\text{IV}, 160).$$

$$2) \int \sin^3 x \cdot \cos x dx \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)} = \frac{\pi}{32} (\sin^2 \mu - \sin^2 \lambda)^2 (\sin^2 \lambda + \sin^2 \mu) \quad (\text{IV}, 160).$$

$$3) \int \sin^{2n+1} x \cdot \cos x dx \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)} = \frac{\pi}{4} (\sin^2 \mu - \sin^2 \lambda)^2 \sin^{2n-1} \mu.$$

$$\sum_0^{\infty} (-1)^n \binom{a-2}{n} \frac{3^{n/2}}{4^{n+1/2}} \frac{(\sin^2 \mu - \sin^2 \lambda)^n}{\sin^{2n} \mu} \quad (\text{IV}, 160).$$

$$4) \int \frac{\cos x}{\sin x} dx \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)} = \frac{\pi}{4} (\sin \mu - \sin \lambda)^2 \quad (\text{IV}, 160).$$

$$5) \int \frac{\cos x}{\sin^3 x} dx \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)} = \frac{\pi}{4} \frac{(\sin \mu - \sin \lambda)^2}{\sin \lambda \cdot \sin \mu} \quad (\text{IV}, 160).$$

$$6) \int \frac{\cos x}{\sin^5 x} dx \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)} = \frac{\pi}{16} \frac{(\sin^2 \mu - \sin^2 \lambda)^2}{\sin^3 \lambda \cdot \sin^3 \mu} \quad (\text{IV}, 160).$$

$$7) \int \frac{\cos x}{\sin^7 x} dx \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)} = \frac{\pi}{32} \frac{(\sin^2 \mu - \sin^2 \lambda)^2}{\sin^5 \lambda \cdot \sin^5 \mu} (\sin^2 \lambda + \sin^2 \mu) \quad (\text{IV}, 160).$$

$$8) \int \frac{\cos x}{\sin^{2n+1} x} dx \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)} = \frac{\pi \sin \mu}{4 \sin^{2n-1} \lambda} \sum_0^{\infty} (-1)^n \binom{a-2}{n} \frac{3^{n/2}}{4^{n+1/2}} \left(\frac{\sin^2 \mu - \sin^2 \lambda}{\sin^2 \mu} \right)^{n+2} \quad (\text{IV}, 160).$$

$$9) \int \frac{\sin x}{\cos x} dx \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)} = \frac{\pi}{4} (\cos \lambda - \cos \mu)^2 \quad (\text{IV}, 160).$$

$$10) \int \frac{\sin x}{\cos^3 x} dx \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)} = \frac{\pi}{4} \frac{(\cos \lambda - \cos \mu)^2}{\cos \lambda \cdot \cos \mu} \quad (\text{IV}, 160).$$

$$11) \int \frac{\sin x}{\cos^5 x} dx \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)} = \frac{\pi}{16} \frac{(\cos^2 \lambda - \cos^2 \mu)^2}{\cos^3 \lambda \cdot \cos^3 \mu} \quad (\text{IV}, 160).$$

$$12) \int \frac{\sin x}{\cos^{2n+1} x} dx \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)} = \frac{\pi \cos \lambda}{4 \cos^{2n-1} \mu} \sum_0^{\infty} (-1)^n \binom{a-2}{n} \frac{3^{n/2}}{4^{n+1/2}} \left(\frac{\cos^2 \lambda - \cos^2 \mu}{\cos^2 \lambda} \right)^{n+2} \quad (\text{IV}, 160).$$

$$13) \int \frac{dx}{\sin x \cdot \cos x} \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)} = \frac{1}{2} \pi \{1 - \cos(\mu - \lambda)\} \quad (\text{IV}, 161).$$

$$14) \int \frac{dx}{\sin^3 x \cdot \cos x} \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)} = \frac{1}{4} \pi \operatorname{Cosec} \lambda \cdot \operatorname{Cosec} \mu \cdot \sin^2(\mu - \lambda) \quad (\text{IV}, 161).$$

$$15) \int \frac{dx}{\sin x \cdot \cos^3 x} \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)} = \frac{1}{4} \pi \sec \lambda \cdot \sec \mu \cdot \sin^2 (\mu - \lambda) \text{ (IV, 161).}$$

$$16) \int \frac{\sin^3 x dx}{\cos x} \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)} = \frac{1}{2} \pi (\cos \lambda - \cos \mu)^2 - \frac{1}{16} \pi (\sin^2 \mu - \sin^2 \lambda)^2 \text{ (IV, 161).}$$

$$1) \int \frac{dx}{\sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{1}{\cos \lambda \cdot \sin \mu} F' \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu} \right) \text{ (VIII, 310).}$$

$$2) \int \frac{\cos x dx}{\sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \operatorname{Cosec} \mu \cdot F' \left(\sqrt{\frac{\sin^2 \mu - \sin^2 \lambda}{\sin^2 \mu}} \right) \text{ (IV, 163).}$$

$$3) \int \frac{\sin^2 x dx}{\sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{\sin \mu}{\cos \lambda} F' \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu} \right) + E' \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu} \right) \\ F' \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu}, \mu \right) - F' \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu} \right) \cdot E \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu}, \mu \right) \text{ (IV, 162).}$$

$$4) \int \frac{\sin x \cdot \cos x dx}{\sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{1}{2} \pi \text{ (VIII, 311).}$$

$$5) \int \frac{\sin^2 x \cdot \cos x dx}{\sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \sin \mu \cdot E' \left(\sqrt{\frac{\sin^2 \mu - \sin^2 \lambda}{\sin^2 \mu}} \right) \text{ (IV, 163).}$$

$$6) \int \frac{\sin^4 x dx}{\sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{1 + \sin^2 \lambda + \sin^2 \mu}{2} \left\{ E' \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu} \right) \right. \\ \left. \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu}, \mu \right) - F' \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu} \right) \cdot E \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu}, \mu \right) \right\} + \\ + \frac{1 + \sin^2 \mu}{2 \cos \lambda} \sin \mu \cdot F' \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu} \right) - \frac{\sin \mu \cdot \cos \lambda}{2} E' \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu} \right) \text{ (IV, 163).}$$

$$7) \int \frac{\sin^3 x \cdot \cos x dx}{\sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{1}{4} \pi (\sin^2 \lambda + \sin^2 \mu) \text{ (IV, 161).}$$

$$8) \int \frac{\sin x \cdot \cos^3 x dx}{\sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{1}{4} \pi (\cos^2 \lambda + \cos^2 \mu) \text{ (IV, 162).}$$

$$9) \int \frac{\sin^5 x \cdot \cos x dx}{\sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{1}{16} \pi (3 \sin^4 \lambda + 2 \sin^2 \lambda \cdot \sin^2 \mu + 3 \sin^4 \mu) \text{ (IV, 162).}$$

$$10) \int \frac{\sin^{2a+1} x \cdot \cos x dx}{\sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{1}{2} \pi \sin^{2a} \mu \cdot \sum_{n=0}^a (-1)^n \binom{a}{n} \frac{1^{n/2}}{2^{n/2}} \left(\frac{\sin^2 \mu - \sin^2 \lambda}{\sin^2 \mu} \right)^n \text{ (IV, 162).}$$

$$11) \int \frac{\sin x \cdot \cos^{a+1} x dx}{\sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{1}{2} \pi \cos^{2a} \lambda \cdot \sum_0^a (-1)^n \binom{a}{n} \frac{1^{n/2}}{2^{n/2}} \left(\frac{\cos^2 \lambda - \cos^2 \mu}{\cos^2 \lambda} \right)^n$$

(IV, 162).

$$12) \int \frac{\cos x dx}{\sin x \cdot \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{1}{2} \pi \operatorname{Cosec} \lambda \cdot \operatorname{Cosec} \mu \quad (\text{VIII}, 312).$$

$$13) \int \frac{dx}{\sin^2 x \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{1}{\cos \lambda \cdot \sin \mu} F' \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu} \right) + \frac{\cos \lambda}{\sin^2 \lambda \cdot \sin \mu} E' \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu} \right) \quad \text{V. T. 73, N. 1, 15.}$$

$$14) \int \frac{\cos x dx}{\sin^2 x \cdot \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{1}{\sin^2 \lambda \cdot \sin \mu} E' \left(\sqrt{\frac{\sin^2 \mu - \sin^2 \lambda}{\sin^2 \mu}} \right) \quad (\text{IV}, 163).$$

$$15) \int \frac{\cos^2 x dx}{\sin^2 x \cdot \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{\cos \lambda}{\sin^2 \lambda \cdot \sin \mu} E' \left(\sqrt{1 - \operatorname{Tg}^2 \lambda \cdot \operatorname{Cot}^2 \mu} \right) \quad (\text{VIII}, 310).$$

$$16) \int \frac{\cos x dx}{\sin^4 x \cdot \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{1}{4} \pi \operatorname{Cosec}^3 \lambda \cdot \operatorname{Cosec}^3 \mu \cdot (\sin^2 \lambda + \sin^2 \mu) \quad (\text{VIII}, 312).$$

$$17) \int \frac{\cos x dx}{\sin^{a+1} x \cdot \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{1}{2} \pi \operatorname{Cosec}^{a+1} \lambda \cdot \operatorname{Cosec} \mu \cdot \sum_0^a (-1)^n \binom{a}{n} \frac{1^{n/2}}{2^{n/2}} \left(\frac{\sin^2 \mu - \sin^2 \lambda}{\sin^2 \mu} \right)^n \quad (\text{IV}, 162).$$

$$18) \int \frac{dx}{\cos x \cdot \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{1}{\sin \mu \cdot \cos^2 \mu} \Pi \left\{ \frac{\sin^2 \mu - \sin^2 \lambda}{\sin^2 \lambda}, \operatorname{Tg}^2 \mu, \sqrt{\frac{\sin^2 \mu - \sin^2 \lambda}{\sin^2 \mu}} \right\}$$

(IV, 163).

$$19) \int \frac{\sin x dx}{\cos x \cdot \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{1}{2} \pi \sec \lambda \cdot \sec \mu \quad (\text{IV}, 162).$$

$$20) \int \frac{dx}{\cos^2 x \cdot \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{1}{\cos \lambda \cdot \sin \mu} F' \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu} \right) + \frac{\sin \mu}{\cos \lambda \cdot \cos^2 \mu} E' \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu} \right) \quad \text{V. T. 73, N. 1, 21.}$$

$$21) \int \frac{\sin^2 x dx}{\cos^2 x \cdot \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{\operatorname{Tg} \mu}{\cos \lambda \cdot \cos \mu} E' \left(\sqrt{1 - \operatorname{Tg}^2 \lambda \cdot \operatorname{Cot}^2 \mu} \right) \quad (\text{VIII}, 310).$$

$$22) \int \frac{\sin x dx}{\cos^3 x \cdot \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{1}{4} \pi \sec^3 \lambda \cdot \sec^3 \mu \cdot (\cos^2 \lambda + \cos^2 \mu) \quad (\text{IV}, 162).$$

$$23) \int \frac{\sin x dx}{\cos^{a+1} x \cdot \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{1}{4} \pi \sec^{a+1} \mu \cdot \sec \lambda \cdot \sum_0^a (-1)^n \binom{a}{n} \frac{1^{n/2}}{2^{n/2}} \left(\frac{\cos^2 \lambda - \cos^2 \mu}{\cos^2 \lambda} \right)^n \quad (\text{IV}, 162).$$

$$24) \int \frac{\sin x \cdot \cos x}{\sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} \frac{dx}{\sqrt{\{1 - (1 - \cot^2 \lambda \cdot \cot^2 \mu) \sin^2 x\}}} = \frac{\sin \mu}{\cos \lambda}$$

$$F' \left\{ \sqrt{1 - \sin^2 2\mu \cdot \operatorname{cosec}^2 2\lambda} \right\} \text{ (VIII, 427).}$$

$$25) \int \frac{\sin x \cdot \cos x}{\sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} \frac{dx}{1 - p^2 \sin^2 x} = \frac{\pi}{2 \sqrt{(1 - p^2 \sin^2 \lambda)(1 - p^2 \sin^2 \mu)}}$$

$$\text{ (IV, 347*).}$$

$$26) \int dx \sqrt{\frac{\sin^2 x - \sin^2 \lambda}{\sin^2 \mu - \sin^2 x}} = \frac{\sin^2 \mu - \sin^2 \lambda}{\sin \mu \cdot \cos \lambda} F' \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu} \right) + E' \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu} \right).$$

$$F \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu}, \mu \right) - F' \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu} \right) \cdot E \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu}, \mu \right) \text{ (IV, 163).}$$

$$27) \int dx \sqrt{\frac{\sin^2 \mu - \sin^2 x}{\sin^2 x - \sin^2 \lambda}} = F' \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu} \right) \cdot E \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu}, \mu \right) - E' \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu} \right).$$

$$F \left(\frac{\sqrt{\cos^2 \lambda - \cos^2 \mu}}{\cos \lambda \cdot \sin \mu}, \mu \right) \text{ (IV, 163).}$$

$$28) \int \frac{\sin x}{(\cos \lambda - \cos x)^{1-p} (\cos x - \cos \mu)^p} \frac{dx}{1 - 2r \cos x + r^2} = \frac{\pi}{(1 - 2r \cos \lambda + r^2)^{1-p}} \frac{\operatorname{Cosec} p \pi}{(1 - 2r \cos \mu + r^2)^p}$$

$$\text{Enneper, Schl. Z. 7, 346.}$$

$$1) \int_0^1 \sin \{p \sqrt{1-x^2}\} dx = \frac{1}{4} p \pi \sum_0^\infty \frac{(-p^2)^n}{2^{n/2} 4^{n/2}} \text{ Lummel, Gr. 37, 349.}$$

$$2) \int_{\frac{\pi}{2}}^\infty \sin \left(q x^2 - q \pi x + \frac{1}{4} q \pi^2 + \frac{p^2}{q} \right) \cdot \sin 2 p x dx = \frac{1}{2} \sin p \pi \cdot \sqrt{\frac{\pi}{2q}} \text{ (VIII, 540).}$$

$$3) \int_{\frac{\pi}{2}}^\infty \sin \left(q x^2 - q \pi x + \frac{1}{4} q \pi^2 + \frac{p^2}{q} \right) \cdot \cos 2 p x dx = \frac{1}{2} \cos p \pi \cdot \sqrt{\frac{\pi}{2q}} \text{ (VIII, 540).}$$

$$4) \int_{\frac{\pi}{2}}^\infty \cos \left(q x^2 - q \pi x + \frac{1}{4} q \pi^2 + \frac{p^2}{q} \right) \cdot \sin 2 p x dx = \frac{1}{2} \sin p \pi \cdot \sqrt{\frac{\pi}{2q}} \text{ (VIII, 540).}$$

$$5) \int_{\frac{\pi}{2}}^\infty \cos \left(q x^2 - q \pi x + \frac{1}{4} q \pi^2 + \frac{p^2}{q} \right) \cdot \cos 2 p x dx = \frac{1}{2} \cos p \pi \cdot \sqrt{\frac{\pi}{2q}} \text{ (VIII, 540).}$$

$$6) \int_0^{\frac{1}{2} \operatorname{Arccos} p} dx \sqrt{\frac{\cos 2x - p}{\cos 2x + 1}} = 2\pi \left\{ 1 - \sqrt{\frac{1+p}{2}} \right\} \text{ (IV, 158).}$$

$$7) \int_\lambda^{\frac{\pi}{2}} \sin \left\{ (a+1) \left(\frac{1}{2} \pi - x \right) \right\} \cdot \sin^{a-1} x dx = \frac{1}{a} \left[1 - \sin^a \lambda \cdot \cos \left\{ a \left(\frac{\pi}{2} - \lambda \right) \right\} \right]$$

$$8) \int_\lambda^{\frac{\pi}{2}} \cos \left\{ (a+1) \left(\frac{1}{2} \pi - x \right) \right\} \cdot \sin^{a-1} x dx = \frac{1}{a} \sin^a \lambda \cdot \sin \left\{ a \left(\frac{\pi}{2} - \lambda \right) \right\}.$$

Sur 7) et 8) voyez Lindmann, Gr. 38, 246.

$$9) \int_{\lambda}^{\frac{\pi}{2}} dx \sqrt{1 - p^2 \sin^2 x} = E(p, \lambda) - \frac{p^2 \sin \lambda \cdot \cos \lambda}{\sqrt{1 - p^2 \sin^2 \lambda}}$$

$$10) \int_{\lambda}^{\frac{\pi}{2}} \sqrt{1 - p^2 \sin^2 x} \frac{dx}{\sin^2 x} = \operatorname{Tg} \lambda \cdot \sqrt{1 - p^2 \sin^2 \lambda} + (1 - p^2) F(p, \lambda) - E(p, \lambda)$$

Sur 9) et 10) voyez Catalan, L. 4, 323.

$$11) \int_{\lambda}^{\frac{\pi}{2}} \frac{dx}{\sqrt{\sin x - \sin \lambda}} = \sqrt{2} \cdot F' \left(\sin \frac{\pi - 2\lambda}{4} \right) \text{ (VIII, 304).}$$

$$12) \int_{\lambda}^{\pi - \lambda} \frac{dx}{\sqrt{\sin x - \sin \lambda}} = 2 \sqrt{2} \cdot F' \left(\sin \frac{\pi - 2\lambda}{4} \right) \text{ (VIII, 304).}$$

$$1) \int_0^{\frac{\pi}{2}} \frac{\sin q k x dx}{\operatorname{Tang} x} = -q \pi \sum_1^{k-1} \cos \frac{1}{2} q n \pi \cdot l \sin \frac{n \pi}{2 k} \text{ (IV, 110*)}.$$

$$2) \int_0^{\frac{\pi}{2}} \frac{\sin x \cdot \sin \{(2k+1)x\}}{1 - 2p \cos 2x + p^2} dx = 0 [p^2 < 1], = 3) \int \frac{\cos x \cdot \cos \{(2k+1)x\}}{1 - 2p \cos 2x + p^2} dx \text{ (IV, 119, 120).}$$

$$4) \int_0^{\frac{\pi}{2}} \sin(k \sec x) \frac{dx}{\sqrt{\cos^2 x}} = (\cos k + \sin k) \sqrt{\frac{\pi}{4k}} \text{ (IV, 130).}$$

$$5) \int_0^{\frac{\pi}{2}} \cos(k \sec x) \frac{dx}{\sqrt{\cos^2 x}} = (\cos k - \sin k) \sqrt{\frac{\pi}{4k}} \text{ (IV, 130).}$$

$$6) \int_0^{\frac{1}{k}} \frac{\sin k^2 x}{\sin x} dx = \frac{1}{2} \pi \text{ (IV, 158).}$$

$$7) \int_0^a \frac{\sin k x dx}{\sin x} = \frac{1}{2} \pi [0 < a < \pi] \text{ (VIII, 380).}$$

$$8) \int_0^a \frac{\sin k x dx}{1 - 2p \cos x + p^2} = 0 =$$

$$9) \int_0^a \frac{\cos k x dx}{1 - 2p \cos x + p^2} [0 < a < \infty] \text{ (VIII, 374).}$$

$$10) \int_0^a \frac{\sin k x \cdot \sin x dx}{1 - 2p \cos x + p^2} = 0 =$$

$$11) \int_0^a \frac{\cos k x \cdot \cos x dx}{1 - 2p \cos x + p^2} [0 < a < \infty] \text{ (VIII, 374).}$$

$$12) \int_0^a \frac{\sin k x \cdot \cos x dx}{1 - 2p \cos x + p^2} = 0 =$$

$$13) \int_0^a \frac{\cos k x \cdot \sin x dx}{1 - 2p \cos x + p^2} [0 < a < \infty] \text{ (VIII, 374).}$$

$$14) \int_0^a \frac{\sin k x}{1 - 2p \cos x + p^2} \frac{dx}{\cos x} = \frac{\pi}{2} \frac{1}{(1-p)^2} [0 < a < \pi] \text{ (VIII, 375).}$$

$$15) \int_0^a \frac{\sin 2 k x}{1 - 2p \cos x + p^2} \frac{dx}{\sin x} = \frac{2 p \pi}{(1-p^2)^2} [a = \pi], = \frac{2 b p \pi}{(1-p^2)^2} [a = b \pi], = \frac{2 b p \pi}{(1-p^2)^2} + \\ + \frac{\cos b \pi}{(1-p \cos b \pi)^2} \left[\begin{matrix} a = b \pi + c, \\ c < \pi \end{matrix} \right] \text{ (VIII, 375).}$$

$$16) \int_0^a \frac{\sin \{(2k+1)x\}}{1-2p \cos x + p^2} \frac{dx}{\sin x} = \pi \frac{1+p^2}{(1-p^2)^2} [a=\pi], = b\pi \frac{1+p^2}{(1-p^2)^2} [a=b\pi], = b\pi \frac{1+p^2}{(1-p^2)^2} + \frac{1}{(1-p \cos b\pi)^2} \left[\begin{matrix} a=b\pi+c, \\ c < \pi \end{matrix} \right] \text{ (VIII, 357).}$$

$$17) \int_0^a \frac{\cos 2kx}{1-2p \cos x + p^2} \frac{dx}{\cos x} = 0 \left[0 < a < \frac{\pi}{2} \right], = \infty \left[\frac{\pi}{2} < a < \infty \right] \text{ (VIII, 375).}$$

$$18) \int_0^a \frac{\cos \{(4k+1)x\}}{1-2p \cos x + p^2} \frac{dx}{\cos x} = \pm \frac{\pi}{2} \frac{1}{1+p^2} \left[a = \frac{1}{2}\pi \right], = \pm \frac{\pi}{1+p^2} \left[\frac{1}{2}\pi < a < \frac{3}{2}\pi \right], = \pm \frac{3}{2} \frac{\pi}{1+p^2} \left[a = \frac{3}{2}\pi \right], = \pm \frac{2b+1}{2} \frac{\pi}{1+p^2} \left[a = \frac{2b+1}{2}\pi \right], = \pm \frac{b\pi}{1+p^2} \left[a = \frac{2b+1}{2}\pi + c, c < \pi \right] \text{ (VIII, 375).}$$

$$19) \int_0^a \frac{\sin \{(2k+1)x\}}{1-2p \cos x + p^2} \operatorname{Tang} x dx = 0 \left[a < \frac{1}{2}\pi \right], = \infty \left[\frac{1}{2}\pi < a < \infty \right] \text{ (VIII, 376).}$$

$$20) \int_0^a \frac{\sin \{(\pm[4k+1]+1)x\}}{1-2p \cos x + p^2} \operatorname{Tang} x dx = \frac{\pi}{2} \frac{1}{1-p^2} \left[a = \frac{1}{2}\pi \right], = \frac{\pi}{1-p^2} \left[\frac{1}{2}\pi < a < \frac{3}{2}\pi \right], = \frac{3}{2} \frac{\pi}{1-p^2} \left[a = \frac{3}{2}\pi \right], = \frac{2b+1}{2} \frac{\pi}{1-p^2} \left[a = \frac{2b+1}{2}\pi \right], = \frac{b+1}{1-p^2} \pi \left[a = \frac{2b+1}{2}\pi + c, c < \pi \right] \text{ (VIII, 376).}$$

$$1) \int \operatorname{Arcsin} px dx = \operatorname{Arcsin} p + \frac{1}{p} \sqrt{1-p^2} - \frac{1}{p} \text{ (VIII, 368).}$$

$$2) \int \operatorname{Arccos} px dx = \operatorname{Arccos} p + \frac{1}{p} - \frac{1}{p} \sqrt{1-p^2} \text{ V. T. 76, N. 1.}$$

$$3) \int \operatorname{Arctg} px dx = \operatorname{Arctg} p - \frac{1}{2p} \ln(1+p^2) \text{ (VIII, 368).}$$

$$4) \int \operatorname{Arccot} px dx = \operatorname{Arccot} p + \frac{1}{2p} \ln(1+p^2) \text{ V. T. 76, N. 3.}$$

$$5) \int \operatorname{Arcsin}(xe^{p'}) dx = \operatorname{Arcsin} \left(\frac{\cos p}{\sqrt{1+\sin p}} \right) - \cos p + \left(\cos \frac{\pi+2p}{4} - i \sin \frac{\pi+2p}{4} \right) \sqrt{2 \sin p} + i \sin p + i \ln \{ \sqrt{\sin p} + \sqrt{1+\sin p} \} \left[p \leq \frac{1}{2}\pi \right] \text{ (IV, 163).}$$

$$6) \int \operatorname{Arctg}(xe^{p'}) dx = \frac{1}{4}\pi - p \sin p - \frac{1}{2} \cos p \cdot \ln(2 \cos p) + \frac{i}{4} \left\{ \ln \frac{1+\sin p}{1-\sin p} + 2 \sin p \cdot \ln(2 \cos p) - \frac{1}{p} \cos p \right\} \left[p^2 \leq \frac{1}{4}\pi^2 \right] \text{ (IV, 163).}$$

$$7) \int \operatorname{Arcsin}(\sqrt{x}) dx = \frac{\pi}{4} =$$

$$8) \int \operatorname{Arccos}(\sqrt{x}) dx \text{ (IV, 164).}$$

$$9) \int (\operatorname{Arccot} x)^2 dx = \frac{1}{16} \pi^2 + \frac{3}{4} \pi \ln 2 - \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 77, N. 3 et T. 78, N. 3.}$$

$$10) \int (\operatorname{Arccot} x)^p dx = \left(\frac{\pi}{4}\right)^p + \frac{p}{2} \left(\frac{\pi}{4}\right)^{p-1} \left\{ 2^p - 1 - 2 \sum_1^{\infty} \frac{2^{2m+p}-1}{p+2m-1} \sum_1^{\infty} \frac{1}{(2n)^{2m}} \right\}$$

V. T. 77, N. 4 et T. 78, N. 4.

$$1) \int \operatorname{Arctg} px dx = \infty \text{ (VIII, 368)} =$$

$$2) \int \operatorname{Arccot} px dx \text{ V. T. 247, N. 2.}$$

$$3) \int (\operatorname{Arccot} px)^2 dx = \frac{\pi}{p} \ln 2 \text{ (VIII, 607).}$$

$$4) \int (\operatorname{Arccot} x)^p dx = p \left(\frac{\pi}{2}\right)^{p-1} \left\{ 1 - \sum_1^{\infty} \frac{2}{p+2m-1} \sum_1^{\infty} \frac{1}{(2n)^{2m}} \right\} \text{ V. T. 248, N. 15.}$$

$$5) \int \left(\operatorname{Arctg} \frac{(p-r)x}{1+prx^2} \right)^2 dx = \frac{2}{r} \ln p + \frac{2}{p} \ln r - 2 \frac{p+r}{pr} \ln \frac{p+r}{2} \text{ (VIII, 606).}$$

$$6) \int \operatorname{Arctg} px \cdot \operatorname{Arccot} \frac{x}{q} dx = \infty \text{ (VIII, 605).}$$

$$7) \int \operatorname{Arccot} qx \cdot \operatorname{Arccot} \frac{x}{p} dx = \frac{\pi}{2} \left\{ \frac{1+pq}{q} \ln(1+pq) - p \ln pq \right\} \text{ (VIII, 607).}$$

$$8) \int \operatorname{Arccot} px \cdot \operatorname{Arccot} qx dx = \frac{\pi}{2} \left\{ \frac{1}{p} \ln \left(1 + \frac{p}{q}\right) + \frac{1}{q} \ln \left(1 + \frac{q}{p}\right) \right\} \text{ (VIII, 607).}$$

$$9) \int \operatorname{Arctg} \left\{ \frac{(p-r)x}{1+prx^2} \right\} \cdot \operatorname{Arctg} qx dx = \infty = 10) \int \operatorname{Arctg} \left\{ \frac{(p-r)x}{x^2+pr} \right\} \cdot \operatorname{Arctg} qx dx \text{ (VIII, 605).}$$

$$11) \int \operatorname{Arctg} \left\{ \frac{(p-r)x}{x^2+pr} \right\} \cdot \operatorname{Arccot} qx dx = \frac{\pi}{2} \left\{ p \ln \frac{1+pq}{pq} - r \ln \frac{1+qr}{qr} + \frac{1}{q} \ln \frac{1+pq}{1+qr} \right\} \text{ (VIII, 607).}$$

$$12) \int \operatorname{Arctg} \left\{ \frac{(q-r)x}{1+qrx^2} \right\} \cdot \operatorname{Arccot} \frac{x}{p} dx = \frac{\pi}{2} \left\{ p \ln \frac{q(1+pr)}{r(1+pq)} - \frac{1}{q} \ln(1+pq) + \frac{1}{r} \ln(1+pr) \right\} \text{ (VIII, 606).}$$

$$13) \int \operatorname{Arctg} \left\{ \frac{(p-r)x}{1+prx^2} \right\} \cdot \operatorname{Arctg} \left\{ \frac{(q-s)x}{1+qsx^2} \right\} dx = \frac{\pi}{2} \left\{ \frac{1}{p} \ln \frac{s(p+q)}{q(p+s)} + \frac{1}{q} \ln \frac{r(p+q)}{p(q+r)} + \frac{1}{r} \ln \frac{q(r+s)}{s(q+r)} + \frac{1}{s} \ln \frac{p(r+s)}{r(p+s)} \right\}$$

(VIII, 606).

$$14) \int \operatorname{Arctg} \left\{ \frac{(p-r)x}{x^2+pr} \right\} \cdot \operatorname{Arctg} \left\{ \frac{(q-s)x}{1+qsx^2} \right\} dx = \frac{\pi}{2} \left\{ p \ln \frac{q(1+ps)}{s(1+pq)} + r \ln \frac{s(1+qr)}{q(1+rs)} + \frac{1}{q} \ln \frac{1+qr}{1+pq} + \frac{1}{s} \ln \frac{1+ps}{1+rs} \right\}$$

(VIII, 606).

$$1) \int \operatorname{Arctg} p x dx = \infty =$$

$$2) \int \operatorname{Arccot} p x dx \text{ V. T. 76, N. 3, 4 et T. 77, N. 1, 2.}$$

$$3) \int (\operatorname{Arccot} x)^2 dx = -\frac{\pi^2}{16} + \frac{\pi}{4} \ln 2 + \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 253, N. 10.}$$

$$4) \int (\operatorname{Arccot} x)^p dx = -\left(\frac{\pi}{4}\right)^p + \frac{1}{2} p \left(\frac{\pi}{4}\right)^{p-1} \left\{1 - \sum_1^{\infty} \frac{2}{p+2m-1} \sum_1^{\infty} \frac{1}{(4n)^{2m}}\right\} \text{ V. T. 253, N. 11.}$$

$$5) \int \operatorname{Arctg} \frac{x}{q} \cdot \operatorname{Arccosec} x dx = \frac{1}{2} \pi q \ln \frac{1 + \sqrt{1+q^2}}{\sqrt{1+q^2}} + \frac{\pi}{2} \ln \{q + \sqrt{1+q^2}\} - \frac{\pi}{2} \operatorname{Arctg} q$$

V. T. 235, N. 10 et T. 244, N. 11.

$$1) \int_0^1 B'(x) dx = \frac{(-1)^{a-1}}{2a+2} B_{2a+1} \text{ (IV, 165).}$$

$$2) \int_0^1 B''(x) dx = 0 \text{ (IV, 165).}$$

$$3) \int_0^1 \{B'(x)\}^2 dx = \frac{1^{2a+1/1}}{(2a+2)^{2a+3/1}} B_{2a+1} + \left(\frac{1}{2a+2} B_{2a+1}\right)^2 \text{ (IV, 165).}$$

$$4) \int_0^1 \{B''(x)\}^2 dx = \frac{1^{2a/1}}{(2a+1)^{2a+2/1}} B_{2a+1} \text{ (IV, 165).}$$

$$5) \int_0^1 dx \operatorname{li}(x) = -\ln 2 \text{ V. T. 283, N. 4.}$$

PARTIE DEUXIÈME.

PARTIE DEUXIÈME.

F. Algébrique;
Exponentielle.

TABLE 80.

Lim. 0 et 1.

$$1) \int e^{qx} x dx = \frac{1}{q^2} \{ (q-1)e^q + 1 \} \text{ (VIII, 362*)}.$$

$$2) \int e^{-qx} x^n dx = \frac{1^{n+1}}{q^{n+1}} (1 - e^{-q}) - e^{-q} \sum_1^n a^{n+1} \frac{1}{q^n} \text{ (VIII, 364)}.$$

$$3) \int e^{-\frac{1}{2}x^2} x^{2n} dx = \sum_0^\infty \frac{1}{(2a+2n+1)!} \left(\frac{-\pi^2}{4} \right)^n \text{ V. T. 399, N. 20.}$$

$$4) \int (e^{px} - e^{-px}) e^{-qx} \frac{dx}{x} = \frac{1}{2} \log \left(\frac{q+p}{q-p} \right)^2 + Ei(p-q) - Ei\{-(p+q)\} \text{ (IV, 213*)}.$$

$$5) \int e^{-px^2} \frac{dx}{1+x^2} = \frac{1}{2} \pi e^p - \sum_1^\infty \frac{p^n}{1^{n+1}} \sum_1^n \frac{(-1)^{m-1}}{2m-1} \text{ Ranke, Cr. 48, 137.}$$

$$6) \int \frac{e^x x dx}{(1+x)^2} = \frac{1}{2} e - 1 \text{ (VIII, 214).}$$

$$7) \int (e^{1-\frac{1}{x}} - e^q) \frac{dx}{x(1-x)} = Z'(q) \text{ (IV, 169).}$$

$$8) \int \left(\frac{be^{1-x^{-b}}}{1-x^b} - \frac{x^{bq}}{1-x} \right) \frac{dx}{x} = \frac{1}{b} \sum_1^b Z' \left(q + \frac{n-1}{n} \right) \text{ (IV, 169).}$$

$$9) \int \left(\frac{be^{1-x^{-b}}}{1-x^b} - \frac{e^{1-\frac{1}{x}}}{1-x} \right) \frac{dx}{x} = -bb \text{ (IV, 169*)}.$$

$$10) \int \left(\frac{be^{1-\frac{1}{x}}}{1-x} - \frac{x^q}{1-\sqrt{x}} \right) \frac{dx}{x} = \sum_1^b Z' \left(q + \frac{n-1}{n} \right) \text{ (IV, 169).}$$

$$11) \int \frac{x}{\sqrt{e^{2q} + e^{-2q} - e^{2qx} - e^{-2qx}}} \frac{dx}{e^{qx} - e^{-qx}} = \frac{\pi}{4q^2} \frac{1}{e^q - e^{-q}} \operatorname{Arcsin} \left(\frac{e^q - e^{-q}}{e^q + e^{-q}} \right) \text{ V. T. 142, N. 11.}$$

$$1) \int e^{-qx} x^{p-1} dx = \frac{1^{p-1/1}}{q^p} = \frac{\Gamma(p)}{q^p} [p > -1, q \text{ aussi imaginaire}] \text{ (VIII, 439).}$$

$$2) \int e^{\pm x} x^{p-1} dx = e^{\pm \frac{1}{2} p \pi i} \Gamma(p) [p < 1] \text{ (VIII, 287).}$$

$$3) \int e^{-(p+q)x} x^a dx = \frac{1^{a/1}}{(p+q)^{a+1}} \text{ (VIII, 247).}$$

$$4) \int e^{-px} (1 - e^{-qx})^a x^b dx = (-1)^b 1^{b/1} \sum_0^a \binom{a}{n} \frac{(-1)^n}{(p+nq)^{b+1}} \text{ V. T. 107, N. 7.}$$

$$5) \int e^{-px^2} x dx = \frac{1}{2p} \text{ (VIII, 246).}$$

$$6) \int e^{-px^2} x^{2a} dx = \frac{1^{a/2}}{(2p)^a} \frac{1}{2} \sqrt{\frac{\pi}{p}} \text{ (VIII, 247)} \left\{ \begin{array}{l} \\ [p \text{ aussi imaginaire}.] \end{array} \right.$$

$$7) \int e^{-px^2} x^{2a+1} dx = \frac{1^{a/1}}{2p^{a+1}} \text{ (VIII, 246)}$$

$$8) \int e^{-x^q} x^p dx = \frac{1}{q} \Gamma\left(\frac{p+1}{q}\right) \text{ (IV, 172).}$$

$$9) \int e^{-x} x^a (x+r)^a dx = 1^{a/1} \{r + (a+1)^{1/1}\}^a \left[\begin{array}{l} \text{Après le développement changez} \\ \{(a+1)^{1/1}\}^n \text{ en } (a+1)^{n/1}. \end{array} \right]$$

Malmsten, Handl. Stockh., 1841.

$$10) \int e^{-q(x^2 + \frac{1}{x^2})} x^{2a} dx = \frac{1}{2} e^{-1/q} \sqrt{\frac{\pi}{q}} \sum_0^{a+1} \frac{(a-n+1)^{2n/1}}{2^n 1^{n/1}} \left(\frac{1}{2q}\right)^n \text{ (VIII, 433).}$$

$$11) \int e^{-x^{\frac{2a}{1+2b}}} x^{a-1} dx = \frac{2b+1}{a \cdot 2^{b+1}} 1^{b/2} \sqrt{\pi} \text{ (IV, 173).}$$

$$12) \int (e^{px} - e^{-px}) e^{-q^2 x^2} x dx = p e^{\frac{p^2}{4q^2}} \frac{\sqrt{\pi}}{2q^2} \text{ (VIII, 570).}$$

$$13) \int (e^{-x} - 1)^a e^{-px} x^{b-1} dx = 1^{b/1} \Delta^a (p^{-b}) \text{ (IV, 173).}$$

$$14) \int \{e^{-x} x^{q-1} - e^{-px} (1 - e^{-x})^{q-1}\} dx = \frac{\Gamma(p+q) - \Gamma(p)}{q} \frac{\Gamma(1+q)}{\Gamma(p+q)} \text{ (IV, 170).}$$

$$1) \int \frac{x e^{-x} dx}{e^x - 1} = \frac{1}{6} \pi^2 - 1 \text{ V. T. 108, N. 7.} \quad 2) \int \frac{x e^{-x} dx}{e^{-x} + 1} = 1 - \frac{1}{12} \pi^2 \text{ V. T. 108, N. 2.}$$

$$3) \int \frac{x e^{-x} dx}{e^{-x} + 1} = \frac{1}{12} \pi^2 - \frac{3}{4} \text{ V. T. 108, N. 3.}$$

$$4) \int \frac{e^{-ax} x dx}{1 + e^{-x}} = \frac{1}{12} \pi^2 + \sum_1^a \frac{(-1)^n}{n^2} \text{ V. T. 108, N. 4.}$$

$$5) \int \frac{e^{-ax} x dx}{1 + e^x} = -\frac{1}{12} \pi^2 + \sum_1^{a-1} \frac{(-1)^{n-1}}{n^2} \text{ V. T. 108, N. 5.}$$

$$6) \int \frac{1 + e^{-x}}{e^x - 1} x dx = \frac{1}{3} \pi^2 - 1 \text{ V. T. 108, N. 9.}$$

$$7) \int \frac{1 - e^{-x}}{1 - e^{-x}} e^{-x} x dx = \frac{2}{27} \pi^2 \text{ V. T. 113, N. 1.}$$

$$8) \int \frac{e^{-qx} + e^{(q-p)x}}{1 - e^{-px}} x dx = \left(\frac{\pi}{p} \operatorname{Cosec} \frac{q\pi}{p} \right)^2 \text{ V. T. 108, N. 15.}$$

$$9) \int \frac{e^{-ax}}{1 - e^{-x}} x^2 dx = 2 \sum_a^\infty \frac{1}{n^3} \text{ V. T. 109, N. 2.}$$

$$10) \int \frac{e^{-ax}}{1 + e^{-x}} x^2 dx = (-1)^a \sum_a^\infty \frac{(-1)^n}{n^3} \text{ V. T. 109, N. 1.}$$

$$11) \int \frac{e^{-qx} - e^{(q-p)x}}{1 - e^{-px}} x^2 dx = 2 \left(\frac{\pi}{p} \operatorname{Cosec} \frac{q\pi}{p} \right)^2 \cdot \operatorname{Cos} \frac{q\pi}{p} \text{ V. T. 109, N. 8*}.$$

$$12) \int \frac{e^{-ax}}{1 - e^{-x}} x^2 dx = \frac{1}{15} \pi^4 - 6 \sum_1^{a-1} \frac{1}{n^4} \text{ V. T. 109, N. 12.}$$

$$13) \int \frac{e^{-ax}}{1 + e^{-x}} x^2 dx = (-1)^a \sum_a^\infty \frac{(-1)^n}{n^4} \text{ V. T. 109, N. 10.}$$

$$14) \int \frac{e^{-qx} - e^{(q-p)x}}{1 + e^{-px}} x^2 dx = \left(\frac{\pi}{p} \operatorname{Cosec} \frac{q\pi}{p} \right)^2 \cdot \operatorname{Cos} \frac{q\pi}{p} \cdot \left(6 - \operatorname{Sin}^2 \frac{q\pi}{p} \right) \text{ V. T. 109, N. 15.}$$

$$15) \int \frac{e^{-qx} + e^{(q-p)x}}{1 - e^{-px}} x^2 dx = 2 \left(\frac{\pi}{p} \operatorname{Cosec} \frac{q\pi}{p} \right)^2 \cdot \left(1 + 2 \operatorname{Cos}^2 \frac{q\pi}{p} \right) \text{ V. T. 109, N. 16.}$$

$$16) \int \frac{e^{-qx} + e^{(q-p)x}}{1 + e^{-px}} x^2 dx = \left(\frac{\pi}{p} \operatorname{Cosec} \frac{q\pi}{p} \right)^2 \cdot \left(24 - 20 \operatorname{Sin}^2 \frac{q\pi}{p} + \operatorname{Sin}^4 \frac{q\pi}{p} \right) \text{ V. T. 109, N. 18.}$$

$$17) \int \frac{e^{-qx} - e^{(q-p)x}}{1 - e^{-px}} x^2 dx = 8 \left(\frac{\pi}{p} \operatorname{Cosec} \frac{q\pi}{p} \right)^2 \cdot \operatorname{Cos} \frac{q\pi}{p} \cdot \left(2 + \operatorname{Cos}^2 \frac{q\pi}{p} \right) \text{ V. T. 109, N. 19.}$$

$$18) \int \frac{e^{-qx} - e^{(q-p)x}}{1 + e^{-px}} x^5 dx = \left(\frac{\pi}{p} \operatorname{Cosec} \frac{q\pi}{p} \right)^6 \cdot \operatorname{Cos} \frac{q\pi}{p} \cdot \left(120 - 60 \operatorname{Sin}^2 \frac{q\pi}{p} + \operatorname{Sin}^4 \frac{q\pi}{p} \right) \text{ V. T. 109, N. 23.}$$

$$19) \int \frac{e^{-qx} + e^{(q-p)x}}{1 - e^{-px}} x^5 dx = 8 \left(\frac{\pi}{p} \operatorname{Cosec} \frac{q\pi}{p} \right)^6 \cdot \left(15 - 15 \operatorname{Sin}^2 \frac{q\pi}{p} + 2 \operatorname{Sin}^4 \frac{q\pi}{p} \right) \text{ V. T. 109, N. 24.}$$

$$20) \int \frac{e^{-qx} + e^{(q-p)x}}{1 + e^{-px}} x^6 dx = \left(\frac{\pi}{p} \operatorname{Cosec} \frac{q\pi}{p} \right)^7 \cdot \left(720 - 840 \operatorname{Sin}^2 \frac{q\pi}{p} + 182 \operatorname{Sin}^4 \frac{q\pi}{p} - \operatorname{Sin}^6 \frac{q\pi}{p} \right) \\ \text{V. T. 109, N. 26.}$$

$$21) \int \frac{e^{-qx} - e^{(q-p)x}}{1 - e^{-px}} x^6 dx = 16 \left(\frac{\pi}{p} \operatorname{Cosec} \frac{q\pi}{p} \right)^7 \cdot \operatorname{Cos} \frac{q\pi}{p} \cdot \left(45 - 30 \operatorname{Sin}^2 \frac{q\pi}{p} + 2 \operatorname{Sin}^4 \frac{q\pi}{p} \right) \text{ V. T. 109, N. 27.}$$

$$22) \int \frac{e^{-qx} - e^{(q-p)x}}{1 + e^{-px}} x^7 dx = \left(\frac{\pi}{p} \operatorname{Cosec} \frac{q\pi}{p} \right)^8 \cdot \operatorname{Cos} \frac{q\pi}{p} \cdot \left(5040 - 4200 \operatorname{Sin}^2 \frac{q\pi}{p} + 546 \operatorname{Sin}^4 \frac{q\pi}{p} - \operatorname{Sin}^6 \frac{q\pi}{p} \right) \\ \text{V. T. 109, N. 31.}$$

$$23) \int \frac{e^{-qx} + e^{(q-p)x}}{1 - e^{-px}} x^7 dx = 16 \left(\frac{\pi}{p} \operatorname{Cosec} \frac{q\pi}{p} \right)^8 \cdot \left(315 - 420 \operatorname{Sin}^2 \frac{q\pi}{p} + 126 \operatorname{Sin}^4 \frac{q\pi}{p} - 4 \operatorname{Sin}^6 \frac{q\pi}{p} \right) \\ \text{V. T. 109, N. 32.}$$

$$24) \int \frac{e^{-qx} - e^{(q-p)x}}{1 - e^{-px}} x^8 dx = 128 \left(\frac{\pi}{p} \operatorname{Cosec} \frac{q\pi}{p} \right)^8 \cdot \operatorname{Cos} \frac{q\pi}{p} \cdot \left(315 - 315 \operatorname{Sin}^2 \frac{q\pi}{p} + 63 \operatorname{Sin}^4 \frac{q\pi}{p} - \operatorname{Sin}^6 \frac{q\pi}{p} \right) \\ \text{V. T. 109, N. 33.}$$

$$1) \int \frac{x^{2a} dx}{e^{qx} + 1} = \frac{2^{2a} - 1}{2^{2a} q^{2a+1}} 1^{2a+1} \sum_1^{\infty} \frac{1}{n^{2a+1}} \text{ V. T. 110, N. 1*}.$$

$$2) \int \frac{x^{2a-1} dx}{e^{qx} + 1} = \frac{2^{2a-1} - 1}{2a \cdot q^{2a}} \pi^{2a} B_{2a-1} \text{ (VIII, 556*)}.$$

$$3) \int \frac{x^{2a} dx}{e^{qx} - 1} = \frac{1^{2a+1}}{q^{2a+1}} \sum_1^{\infty} \frac{1}{n^{2a+1}} \text{ V. T. 110, N. 6*}.$$

$$4) \int \frac{x^{2a-1} dx}{e^{qx} - 1} = \frac{2^{2a-1} \pi^{2a}}{a q^{2a}} B_{2a-1} \text{ (VIII, 556*)}.$$

$$5) \int \frac{x^{p-1} dx}{e^{qx} - q} = \frac{1}{q^p} \Gamma(p) \sum_1^{\infty} \frac{q^n}{n^p} \text{ (IV, 174).} \quad 6) \int \frac{x^{p-1} dx}{e^{qx} + 1} = \frac{\Gamma(p)}{q^p} \sum_0^{\infty} \frac{(-1)^n}{(n+1)^p} \text{ V. T. 110, N. 3*}.$$

$$7) \int \frac{x^{p-1} dx}{e^{qx} - 1} = \frac{\Gamma(p)}{q^p} \sum_0^{\infty} \frac{1}{(n+1)^p} \text{ V. T. 110, N. 6*}.$$

- 8) $\int \frac{1 - e^{-bx}}{1 - e^x} x^{a-1} dx = -1^{a+1} \sum_1^b \frac{1}{n^a}$ V. T. 110, N. 9.
- 9) $\int \frac{e^{-qx}}{1 + e^x} x^{a-1} dx = \Gamma(a) \sum_1^\infty \frac{(-1)^{n-1}}{(q+n)^a}$ V. T. 110, N. 4.
- 10) $\int \frac{e^{-qx}}{1 - e^x} x^{a-1} dx = -\Gamma(a) \sum_1^\infty \frac{1}{(q+n)^a}$ V. T. 110, N. 7.
- 11) $\int \frac{e^{qx} + 1}{e^{qx} - 1} x^{2a-1} dx = \frac{2^{2a-1}}{a} B_{2a-1} \left(\frac{\pi}{q}\right)^{2a}$ (VIII, 555*).
- 12) $\int \frac{e^{px} + e^{-px}}{e^{qx} - 1} x^{2a-1} dx = \sum_n^\infty \frac{(2\pi)^{2a}}{2n} \frac{1}{1^{2a-2n+1}} \left(\frac{p}{q}\right)^{2a-2n} B_{2a-1}$ (VIII, 578*).
- 13) $\int e^{-px} (e^{-x} - 1)^q \left(p + \frac{ce^{-x}}{e^{-x} - 1}\right) x^q dx = \Gamma(q) \Delta^q (p^{-q})$ (IV, 176).

- 1) $\int \frac{x dx}{e^x + e^{-x}} = \sum_n^\infty \frac{(-1)^n}{(2n+1)^2}$ V. T. 108, N. 10.
- 2) $\int \frac{x dx}{e^x - e^{-x}} = \frac{1}{8} \pi^2$ V. T. 108, N. 11.
- 3) $\int \frac{x^2 dx}{e^x + e^{-x}} = \frac{1}{16} \pi^2$ V. T. 109, N. 3.
- 4) $\int \frac{e^{-2nx}}{e^x - e^{-x}} x^2 dx = 2 \sum_n^\infty \frac{1}{(2n+1)^3}$ V. T. 109, N. 4.
- 5) $\int \frac{x^2 dx}{e^x - e^{-x}} = \frac{1}{16} \pi^2$ V. T. 109, N. 13.
- 6) $\int \frac{e^{-2nx}}{e^x - e^{-x}} x^3 dx = \frac{1}{16} \pi^2 - 6 \sum_1^a \frac{1}{(2n-1)^3}$ V. T. 109, N. 14.
- 7) $\int \frac{x^4 dx}{e^x + e^{-x}} = \frac{5}{64} \pi^4$ V. T. 109, N. 17.
- 8) $\int \frac{x^5 dx}{e^x - e^{-x}} = \frac{1}{8} \pi^4$ V. T. 109, N. 22.
- 9) $\int \frac{x^6 dx}{e^x + e^{-x}} = \frac{61}{256} \pi^4$ V. T. 109, N. 25.
- 10) $\int \frac{x^7 dx}{e^x - e^{-x}} = \frac{17}{32} \pi^4$ V. T. 109, N. 30.
- 11) $\int \frac{x^q dx}{e^x + e^{-x}} = \Gamma(q+1) \sum_0^\infty \frac{(-1)^n}{(2n+1)^{q+1}}$ (VIII, 474).
- 12) $\int \frac{x^{2a} dx}{e^{px} + e^{-px}} = \frac{1}{2} \left(\frac{\pi}{2p}\right)^{2a+1} B_{2a}$ (VIII, 555*).

F. Alg. rat. ent. monôme;
Exp. bin. $e^{ax} \pm e^{-ax}$ en dén.

TABLE 84, suite.

Lim. 0 et ∞ .

$$13) \int \frac{x^{2a} dx}{e^{px} - e^{-px}} = \frac{2^{2a+1} - 1}{(2p)^{2a+1}} 1^{2a/1} \sum_1^{\infty} \frac{1}{n^{2a+1}} \text{ V. T. 110, N. 12.}$$

$$14) \int \frac{x^{2a-1} dx}{e^{px} - e^{-px}} = \frac{2^{2a} - 1}{4a} \left(\frac{\pi}{p}\right)^{2a} B_{2a-1} \text{ (VIII, 556*)}.$$

$$15) \int \frac{e^{qx} - e^{-qx}}{e^{px} + e^{-px}} x dx = \frac{\pi^2}{4p^2} \sin \frac{q\pi}{2p} \cdot \sec^2 \frac{q\pi}{2p} [p > q] \text{ V. T. 112, N. 3.}$$

$$16) \int \frac{e^{qx} + e^{-qx}}{e^{px} - e^{-px}} x dx = \frac{\pi^2}{4p^2} \sec^2 \frac{q\pi}{2p} [p > q] \text{ V. T. 112, N. 4.}$$

$$17) \int \frac{e^{qx} + e^{-qx}}{e^{px} + e^{-px}} x^2 dx = \frac{\pi^2}{8p^3} \left(2 \sec^2 \frac{q\pi}{2p} - \sec \frac{q\pi}{2p}\right) [p > q] \text{ V. T. 109, N. 7.}$$

$$18) \int \frac{e^{qx} - e^{-qx}}{e^{px} - e^{-px}} x^2 dx = \frac{\pi^2}{4p^3} \sin \frac{q\pi}{2p} \cdot \sec^2 \frac{q\pi}{2p} [p > q] \text{ V. T. 109, N. 8.}$$

F. Alg. rat. ent. monôme;
Exp. bin. $(e^{ax} \pm 1)^2$ en dén.

TABLE 85.

Lim. 0 et ∞ .

$$1) \int \frac{1 + (-1)^a e^{-ax}}{(1 + e^{-x})^2} e^{-x} x dx = \frac{1}{12} a\pi^2 + \sum_1^{a-1} (-1)^n \frac{a-n}{n^2} \text{ V. T. 111, N. 2.}$$

$$2) \int \frac{1 - e^{-2ax}}{(1 - e^{-2x})^2} x dx = \frac{1}{8} a\pi^2 - \sum_1^{a-1} \frac{a-n}{(2n-1)^2} \text{ V. T. 111, N. 5.}$$

$$3) \int \frac{1 - e^{-ax}}{(1 - e^{-x})^2} e^{-x} x dx = \frac{1}{6} a\pi^2 - \sum_1^{a-1} \frac{a-n}{n^2} \text{ V. T. 111, N. 3.}$$

$$4) \int \frac{1 + (-1)^a e^{-ax}}{(1 + e^{-x})^2} e^{-x} x^2 dx = 2a \sum_a^{\infty} \frac{(-1)^{n-1}}{n^3} + 2 \sum_1^{a-1} \frac{(-1)^{n-1}}{n^2} \text{ V. T. 111, N. 7.}$$

$$5) \int \frac{1 - e^{-ax}}{(1 - e^{-x})^2} e^{-x} x^2 dx = 2a \sum_a^{\infty} \frac{1}{n^3} + 2 \sum_1^{a-1} \frac{1}{n^2} \text{ V. T. 111, N. 8.}$$

$$6) \int \frac{1 - e^{-2ax}}{(1 - e^{-2x})^2} e^{-x} x^2 dx = -\frac{1}{16} \pi^4 + 6 \sum_1^{a-1} \frac{1}{(2n-1)^4} \text{ V. T. 111, N. 9.}$$

$$7) \int \frac{e^x - e^{-x} + 2}{(e^x - 1)^2} x^2 dx = \frac{2}{3} \pi^2 - 2 \text{ V. T. 82, N. 6.}$$

$$8) \int \frac{1 + (-1)^a e^{-ax}}{(1 + e^{-x})^2} e^{-x} x^2 dx = \frac{7}{120} a\pi^4 + 6 \sum_1^{a-1} (-1)^n \frac{a-n}{n^4} \text{ V. T. 111, N. 10.}$$

$$9) \int \frac{1 - e^{-ax}}{(1 - e^{-x})^2} e^{-x} x^2 dx = \frac{1}{15} a\pi^4 - 6 \sum_1^{a-1} \frac{a-n}{n^4} \text{ V. T. 111, N. 11.}$$

F. Alg. rat. ent. monôme;
Exp. bin. $(e^{ax} \pm 1)^2$ en dén. TABLE 85, suite.

Lim. 0 et ∞ .

$$10) \int \frac{1 - e^{-2ax}}{(1 - e^{-2x})^2} e^{-x} x^2 dx = \frac{1}{16} a \pi^2 - 6 \sum_1^{a-1} \frac{a-n}{(2n-1)^4} \quad \text{V. T. 111, N. 12.}$$

$$11) \int \frac{e^{qx} x^p dx}{(1 + e^{qx})^2} = \frac{\Gamma(p+1)}{q^{p+1}} \sum_0^{\infty} \frac{(-1)^n}{(1+n)^p} \quad \text{V. T. 83, N. 6.}$$

$$12) \int \frac{e^{qx} x^p dx}{(1 - e^{qx})^2} = \frac{\Gamma(p+1)}{q^{p+1}} \sum_0^{\infty} \frac{1}{(1+n)^p} \quad \text{V. T. 83, N. 7.}$$

$$13) \int \frac{e^{-rx} x^q dx}{(1 - pe^{-rx})^2} = \frac{\Gamma(q+1)}{pr^{q+1}} \sum_1^{\infty} \frac{p^n}{n^q} \quad \text{V. T. 83, N. 5.}$$

$$14) \int \frac{(1+q)e^x + q}{(1+e^x)^2} e^{-qx} x^a dx = \Gamma(a+1) \sum_1^{\infty} \frac{(-1)^n}{(q+n)^a} \quad \text{V. T. 83, N. 9.}$$

$$15) \int \frac{(1+q)e^x - q}{(1-e^x)^2} e^{-qx} x^a dx = \Gamma(a+1) \sum_0^{\infty} \frac{1}{(q+n)^a} \quad \text{V. T. 83, N. 10.}$$

F. Alg. rat. ent. monôme;
Exp. bin. $(e^{ax} \pm e^{-ax})^2$ en dén. TABLE 86.

Lim. 0 et ∞ .

$$1) \int \frac{x dx}{(e^{qx} + e^{-qx})^2} = \frac{1}{4q^2} \log 2 \quad (\text{IV, 180}).$$

$$2) \int \frac{x^{2a} dx}{(e^{qx} + e^{-qx})^2} = \frac{2^{2a-1} - 1}{(2q)^{2a+1}} \pi^{2a} B_{2a-1} \quad (\text{VIII, 590*}).$$

$$3) \int \frac{x^{2a+1} dx}{(e^{qx} + e^{-qx})^2} = \frac{2^{2a} - 1}{q(4q)^{2a+1}} 1^{2a+1/2} \sum_1^{\infty} \frac{1}{n^{2a+1}} \quad \text{V. T. 83, N. 1.}$$

$$4) \int \frac{x^{2a+1} dx}{(e^{qx} - e^{-qx})^2} = \frac{1^{2a+1/2}}{(2q)^{2a+1}} \sum_1^{\infty} \frac{1}{n^{2a+1}} \quad \text{V. T. 83, N. 3.}$$

$$5) \int \frac{x^{2a} dx}{(e^{qx} - e^{-qx})^2} = \frac{\pi^{2a}}{4q^{2a+1}} B_{2a-1} \quad (\text{VIII, 590*}).$$

$$6) \int \frac{x^p dx}{(e^{qx} + e^{-qx})^2} = \frac{\Gamma(p+1)}{(2q)^{p+1}} \sum_0^{\infty} \frac{(-1)^n}{(n+1)^p} \quad \text{V. T. 83, N. 6.}$$

$$7) \int \frac{x^p dx}{(e^{qx} - e^{-qx})^2} = \frac{\Gamma(p+1)}{(2q)^{p+1}} \sum_0^{\infty} \frac{1}{(n+1)^p} \quad \text{V. T. 83, N. 7.}$$

$$8) \int \frac{e^{qx} - e^{-qx}}{(e^{qx} + e^{-qx})^2} x dx = \frac{\pi}{4q^2} \quad \text{V. T. 27, N. 2.}$$

$$9) \int \frac{e^{qx} - e^{-qx}}{(e^{qx} + e^{-qx})^{p+1}} x dx = \frac{\Gamma(p) \vee \pi}{2^{2p+1} p q^2 \Gamma(p + \frac{1}{2})} \quad \text{V. T. 27, N. 17.}$$

F. Alg. rat. ent. monôme;
Exp. bin. $(e^{ax} \pm e^{-ax})^2$ en dén.

TABLE 86, suite.

Lim. 0 et ∞ .

$$10) \int \frac{e^{qx} - e^{-qx}}{(e^{qx} + e^{-qx})^2} x^2 dx = \frac{1}{4q^3} \text{ V. T. 86, N. 1.}$$

$$11) \int \frac{e^{qx} + e^{-qx}}{(e^{qx} - e^{-qx})^2} x^2 dx = \frac{\pi^2}{4q^3} \text{ V. T. 84, N. 14.}$$

$$12) \int \frac{e^{qx} - e^{-qx}}{(e^{qx} + e^{-qx})^2} x^{2a+1} dx = \frac{2a+1}{2q} \left(\frac{\pi}{2q}\right)^{2a+1} B_{2a} \text{ V. T. 84, N. 12.}$$

$$13) \int \frac{e^{qx} + e^{-qx}}{(e^{qx} - e^{-qx})^2} x^{2a+1} dx = \frac{2^{2a+1} - 1}{q(2q)^{2a+1}} 1^{2a+1/2} \sum_1^{\infty} \frac{1}{n^{2a+1}} \text{ V. T. 84, N. 13.}$$

$$14) \int \frac{e^{qx} + e^{-qx}}{(e^{qx} - e^{-qx})^2} x^{2a} dx = \frac{2^{2a} - 1}{2q} \left(\frac{\pi}{q}\right)^{2a} B_{2a-1} \text{ V. T. 84, N. 14.}$$

$$15) \int \frac{e^x - e^{-x}}{(e^x + e^{-x})^2} x^p dx = \Gamma(p+1) \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^p} \text{ V. T. 84, N. 11.}$$

F. Alg. rat. ent. binôme;
Exp. binôme en dén.

TABLE 87.

Lim. 0 et ∞ .

$$1) \int \frac{(1+xi)^{2a} - (1-xi)^{2a}}{i} \frac{dx}{e^{\pi x} + 1} = \frac{1}{2a+1} \text{ (IV, 181).}$$

$$2) \int \frac{(1+xi)^{2a-1} - (1-xi)^{2a-1}}{i} \frac{dx}{e^{\pi x} + 1} = \frac{1}{2a} \{1 + (-1)^a 2^{2a} B_{2a-1}\} \text{ (IV, 181).}$$

$$3) \int \frac{(1+xi)^{2a-1} - (1-xi)^{2a-1}}{i} \frac{dx}{e^{\pi x} - 1} = \frac{2a-1}{4a} + (-1)^a \frac{2^{2a-1} - 1}{2a} B_{2a-1} \text{ (VIII, 579).}$$

$$4) \int \frac{(1+xi)^{2a} - (1-xi)^{2a}}{i} \frac{dx}{e^{2\pi x} - 1} = \frac{1}{2} \frac{2a-1}{2a+1} \text{ (IV, 181).}$$

$$5) \int \frac{(1+xi)^{2a-1} - (1-xi)^{2a-1}}{i} \frac{dx}{e^{2\pi x} - 1} = \frac{a-1}{2a} + (-1)^{a-1} \frac{1}{2a} B_{2a-1} \text{ (VIII, 579).}$$

$$6) \int \frac{(1+xi)^{2a-1} + (1-xi)^{2a-1}}{e^{\frac{1}{2}\pi x} + e^{-\frac{1}{2}\pi x}} dx = (-1)^{a-1} \frac{2^{2a} - 1}{2a} 2^{2a} B_{2a-1} \text{ (IV, 182).}$$

$$7) \int \frac{(1+xi)^{2a} - (1-xi)^{2a}}{i} \frac{dx}{e^{\frac{1}{2}\pi x} - e^{-\frac{1}{2}\pi x}} = (-1)^{a+1} B_{2a} + 1 \text{ (IV, 181).}$$

$$8) \int \frac{(1+xi)^{2a-1} - (1-xi)^{2a-1}}{i} \frac{dx}{e^{\frac{1}{2}\pi x} - e^{-\frac{1}{2}\pi x}} = 1 \text{ (IV, 182).}$$

- $$1) \int \frac{x dx}{e^x + e^{-x} - 1} = \frac{4}{27} \pi^2 \text{ V. T. 113, N. 3.} \quad 2) \int \frac{x e^{-x} dx}{e^x + e^{-x} - 1} = \frac{5}{108} \pi^2 \text{ V. T. 113, N. 4.}$$
- $$3) \int \frac{x^2 dx}{e^x + e^{-x} + 2 \cos \lambda} = \frac{1}{6} \lambda \operatorname{Cosec} \lambda \cdot (\pi^2 - \lambda^2) \text{ V. T. 113, N. 7.}$$
- $$4) \int \frac{x^4 dx}{e^x + e^{-x} + 2 \cos \lambda} = \frac{1}{30} \lambda \operatorname{Cosec} \lambda \cdot (\pi^2 - \lambda^2) (7\pi^2 - 3\lambda^2) \text{ V. T. 113, N. 8.}$$
- $$5) \int \frac{x^{2a} dx}{e^x + e^{-x} - 2 \cos 2p\pi} = 1^{2a+1} \operatorname{Cosec} 2p\pi \cdot \sum_1^{\infty} \frac{\sin 2np\pi}{n^{2a+1}} \text{ (VIII, 475).}$$
- $$6) \int \frac{\cos 2p\pi - e^{-x}}{e^x + e^{-x} - 2 \cos 2p\pi} x^{2a+1} dx = 1^{2a+1} \sum_1^{\infty} \frac{\cos 2np\pi}{n^{2a+1}} \text{ (VIII, 476).}$$
- $$7) \int \frac{1 + p e^{-x}}{e^x + e^{-x} + 1} x dx = \frac{4+p}{54} \pi^2 \text{ V. T. 113, N. 1, 2.}$$
- $$8) \int \frac{e^x \cos \lambda - 1}{e^{2x} + 1 - 2e^x \cos \lambda} x dx = \frac{1}{6} \pi^2 - \frac{1}{2} \pi \lambda + \frac{1}{4} \lambda^2 \text{ (IV, 183).}$$
- $$9) \int \frac{e^x - e^{-x}}{e^{2x} + e^{-2x} + 2p} x dx = \frac{\pi}{2\sqrt{2}(p-1)} \left[\frac{\sqrt{p-1} + \sqrt{p+1} - \sqrt{2}}{\sqrt{p-1} - \sqrt{p+1} + \sqrt{2}} [p^2 > 1], = \frac{1}{8} \pi \operatorname{Arccos} p. \right. \\ \left. \sqrt{\frac{2}{1-p}} [p^2 < 1] \text{ (IV, 183).} \right.$$
- $$10) \int \frac{\cos \lambda - p e^{-x}}{e^x + p^2 e^{-x} - 2p \cos \lambda} e^{(1-q)x} x^{r-1} dx = \Gamma(r) \sum_1^{\infty} \frac{p^{n-1} \cos n\lambda}{(q+n-1)^r} \text{ V. T. 113, N. 11.}$$
- $$11) \int \frac{e^{qx} - e^{-qx}}{(e^{qx} - 2 \cos \lambda + e^{-qx})^2} x dx = \frac{1}{2q^2} \lambda \operatorname{Cosec} \lambda \text{ V. T. 27, N. 22.}$$
- $$12) \int \frac{e^x - e^{-x}}{(e^x + e^{-x} - 1)^2} x^2 dx = \frac{8}{27} \pi^2 \text{ V. T. 88, N. 1.}$$
- $$13) \int \frac{e^x - e^{-x}}{(e^x + e^{-x} + 2 \cos \lambda)^2} x^2 dx = \frac{1}{2} \lambda \operatorname{Cosec} \lambda \cdot (\pi^2 - \lambda^2) \text{ V. T. 88, N. 8.}$$
- $$14) \int \frac{e^x - e^{-x}}{(e^x + e^{-x} - 2 \cos 2p\pi)^2} x^{2a+1} dx = 1^{2a+1} \operatorname{Cosec} 2p\pi \cdot \sum_1^{\infty} \frac{\sin 2np\pi}{n^{2a+1}} \text{ V. T. 88, N. 5.}$$
- $$15) \int \frac{(1+x)^{2a-1} \{e^{p(1-x)} + e^{p(x-1)}\} - (1-x)^{2a-1} \{e^{p(x+1)} + e^{-p(x+1)}\}}{e^{\pi x} - 1} dx = \\ = (-1)^a \sum_a^{\infty} \left\{ \frac{2^{2a-1} - 1}{n} B_{2a-1} + (-1)^n \frac{2a-1}{2n} \right\} \frac{p^{2a-1}}{1^{2a-1}/1} \text{ (VIII, 578).}$$
- $$16) \int \frac{(1+x)^{2a-1} \{e^{p(1-x)} + e^{p(x-1)}\} - (1-x)^{2a-1} \{e^{p(x+1)} + e^{-p(x+1)}\}}{e^{\pi x} - 1} dx = \\ = (-1)^a \sum_a^{\infty} \left\{ \frac{1}{n} B_{2a-1} + (-1)^{n-1} \frac{n-1}{n} \right\} \frac{p^{2a-1}}{1^{2a-1}/1} \text{ (VIII, 578).}$$

$$1) \int e^{-q^2 x^2 - \frac{p^2}{x^2}} \frac{dx}{x^2} = \frac{1}{2p} e^{-1/pq} \sqrt{\pi} \text{ (VIII, 518*)}. \quad 2) \int (e^{-px} - e^{-qx}) \frac{dx}{x} = l \frac{q}{p} \text{ (VIII, 337)}.$$

$$3) \int (e^{-qx^r} - e^{-px^r}) \frac{dx}{x} = \frac{1}{r} l \frac{p}{q} \text{ (VIII, 435*)}. \quad 4) \int (e^{-px} - e^{-qx}) e^{-rx} \frac{dx}{x} = l \frac{q+r}{p+r} \text{ (IV, 185)}.$$

$$5) \int (e^{-x^2} - e^{-x}) \frac{dx}{x} = \frac{1}{2} A \text{ (VIII, 682)}. \quad 6) \int (e^{-x^4} - e^{-x^2}) \frac{dx}{x} = \frac{1}{4} A \text{ (VIII, 682)}.$$

$$7) \int (e^{-x^4} - e^{-x}) \frac{dx}{x} = \frac{3}{4} A \text{ (VIII, 682)}. \quad 8) \int (e^{-x^{2a}} - e^{-x}) \frac{dx}{x} = \left(1 - \frac{1}{2^a}\right) A \text{ (VIII, 682)}.$$

$$9) \int (e^{-x^p} - e^{-x^q}) \frac{dx}{x} = \frac{p-q}{pq} A \text{ (VIII, 702*)}. \quad 10) \int (e^{-x} - 1)^b e^{-ax} \frac{dx}{x} = -\Delta^b \cdot l a \text{ (IV, 185)}.$$

$$11) \int (e^{-px} - e^{-qx}) (e^{-rx} - e^{-sx}) e^{-x} \frac{dx}{x} = l \frac{(p+s+1)(q+r+1)}{(p+r+1)(q+s+1)} \text{ V. T. 123, N. 7.}$$

$$12) \int (1 - e^{-px})(1 - e^{-qx}) e^{-x} \frac{dx}{x^2} = (p+q+1)l(p+q+1) - (p+1)l(p+1) - (q+1)l(q+1)$$

V. T. 124, N. 2.

$$13) \int (1 - e^{-px})^2 e^{-qx} \frac{dx}{x^2} = (2p+q)l(2p+q) - 2(p+q)l(p+q) + qlq \text{ V. T. 124, N. 3.}$$

$$14) \int (1 - e^{-px})(1 - e^{-qx})(1 - e^{-rx}) e^{-x} \frac{dx}{x^2} = (p+q+1)l(p+q+1) + (p+r+1)l(p+r+1) + \\ + (q+r+1)l(q+r+1) - (p+1)l(p+1) - (q+1)l(q+1) - (r+1)l(r+1) - \\ - (p+q+r)l(p+q+r) \text{ V. T. 124, N. 4.}$$

$$15) \int (e^{-x} - 1)^a e^{-px} \frac{dx}{x^2} = \Delta^a \cdot p l p \text{ (IV, 186)}.$$

$$16) \int (1 - e^{-px})^a e^{-qx} \frac{dx}{x^2} = \sum_0^a (-1)^n \binom{a}{n} (q+np)l(q+np) \text{ V. T. 124, N. 6.}$$

$$17) \int (e^{-qx} - 1)^a (e^{-rx} - 1)^b e^{-px} \frac{dx}{x^2} = \sum_0^a (-1)^n \binom{a}{n} \sum_0^b (-1)^m \binom{b}{m} \{(b-m)r + (a-n)q + p\} \\ l\{(b-m)r + (a-n)q + p\} \text{ V. T. 124, N. 8.}$$

$$18) \int \{(p-r)e^{-qx} + (r-q)e^{-px} + (q-p)e^{-rx}\} \frac{dx}{x^2} = (r-q)p l p + (p-r)q l q + (q-p)r l r$$

V. T. 124, N. 9.

$$19) \int \left\{ \left(\frac{1}{2} + \frac{1}{x} \right) e^{-x} - \frac{1}{x} e^{-\frac{1}{2}x} \right\} \frac{dx}{x} = \frac{1}{2} (l2 - 1) \text{ (IV, 186)}.$$

$$20) \int \left\{ e^{-x} + \frac{1}{x} e^{-x} - \frac{1}{x} \right\} \frac{dx}{x} = -1 \text{ (IV, 186).}$$

$$21) \int \left\{ p e^{-x} + \frac{1}{x} e^{-px} - q e^{-x} - \frac{1}{x} e^{-qx} \right\} \frac{dx}{x} = p \, l p - p - q \, l q + q \text{ (IV, 186).}$$

$$22) \int \left\{ \left(p - \frac{1}{2} \right) e^{-x} + \frac{x+2}{2x} (e^{-px} - e^{-\frac{1}{2}x}) \right\} \frac{dx}{x} = \left(p - \frac{1}{2} \right) (l p - 1) \text{ (IV, 186).}$$

$$23) \int \left\{ 1 - \frac{x+2}{2x} (1 - e^{-x}) \right\} e^{-qx} \frac{dx}{x} = -1 + \left(q + \frac{1}{2} \right) l \frac{q+1}{q} \text{ (IV, 186).}$$

$$24) \int \left\{ q e^{-x} - \frac{1}{x} (1 - e^{-qx}) \right\} \frac{dx}{x} = q \, l q - q \text{ (VIII, 585).}$$

$$25) \int \left\{ e^{-x} - e^{-\frac{1}{2}x} - \frac{1}{x} e^{-\frac{1}{2}x} \right\} \frac{dx}{x} = 1 - l 2 \text{ (IV, 186).}$$

$$26) \int \left\{ (p-q) e^{-bx} - \frac{1}{ax} (e^{-apx} - e^{-aqx}) \right\} \frac{dx}{x} = p \, l p - q \, l q - (p-q) \left\{ 1 + l \frac{b}{a} \right\}$$

$$27) \int \left\{ (p-q) e^{-rx} - \frac{1}{x} (e^{-px} - e^{-qx}) \right\} \frac{dx}{x} = p \, l p - q \, l p - (p-q) \{ 1 + l r \}$$

$$28) \int \left\{ \frac{1}{a} (e^{-apx} - e^{-aqx}) - \frac{1}{b} (e^{-bpx} - e^{-bqx}) \right\} \frac{dx}{x^2} = (q-p) l \frac{b}{a}$$

Sur 26) à 28) voyez Winckler, Sitz. Ber. Wien. B. 21, 389.

$$29) \int \left\{ \frac{e^{-px}}{(p-q)(p-r)(p-s)} + \frac{e^{-qx}}{(q-p)(q-r)(q-s)} + \frac{e^{-rx}}{(r-p)(r-q)(r-s)} + \frac{e^{-sx}}{(s-p)(s-q)(s-r)} \right\} \frac{dx}{x^2} =$$

$$= \frac{\frac{1}{2} p^2 \, l p}{(p-q)(p-r)(p-s)} + \frac{\frac{1}{2} q^2 \, l q}{(q-p)(q-r)(q-s)} + \frac{\frac{1}{2} r^2 \, l r}{(r-p)(r-q)(r-s)} + \frac{\frac{1}{2} s^2 \, l s}{(s-p)(s-q)(s-r)}$$

V. T. 124, N. 16.

$$30) \int (1 - e^{-px})^a e^{-qx} \frac{dx}{x^2} = \frac{1}{2} \sum_0^a (-1)^{n-1} \binom{a}{n} (q+np)^2 \, l(q+np) \text{ V. T. 124, N. 14.}$$

$$31) \int (1 - e^{-px})^a (1 - e^{-qx}) e^{-x} \frac{dx}{x^2} = \frac{1}{2} \sum_0^a (-1)^n \binom{a}{n} (q+np+1)^2 \, l(q+np+1) +$$

$$+ \frac{1}{2} \sum_1^a (-1)^{n-1} \binom{a}{n} (pn+1)^2 \, l(pn+1) \text{ V. T. 124, N. 15.}$$

$$32) \int \left\{ \frac{1}{2} q^2 e^{-x} - \frac{1}{x} q + \frac{1}{x^2} (1 - e^{-qx}) \right\} \frac{dx}{x} = \frac{1}{2} q^2 \, l q - \frac{3}{4} q^2 \text{ (IV, 187).}$$

$$33) \int \left\{ \frac{1}{6} q^3 \sigma^{-x} - \frac{1}{2x} q^2 + \frac{1}{x^2} q - \frac{1}{x^3} (1 - \sigma^{-qx}) \right\} \frac{dx}{x} = \frac{1}{6} q^3 lq - \frac{11}{36} q^3 \quad (\text{IV}, 187).$$

$$34) \int \left\{ \left(1 + \frac{r}{qx}\right)^{qx} - \left(1 + \frac{r}{px}\right)^{px} \right\} \frac{dx}{x} = (e^r - 1) l \frac{q}{p} \quad (\text{VIII}, 280).$$

$$1) \int \sigma^{-qx} \frac{dx}{x^p} = q^{p-1} \Gamma(1-p) [p < 1] \quad (\text{VIII}, 439).$$

$$2) \int \sigma^{-px^2 - \frac{q}{x}} \frac{dx}{x^{1/2}} = \frac{1}{2} \left(\frac{p}{q}\right)^{1/2} \sigma^{-1/pq} \sqrt{\frac{\pi}{p}} \cdot \sum_{n=0}^{\infty} \frac{(a-n)^{2n/1}}{1^{n/1}} \left(\frac{1}{4\sqrt{pq}}\right)^n \quad (\text{IV}, 210*).$$

$$3) \int (\sigma^{-qx} - 1) \frac{dx}{x^{p+1}} = -\frac{1}{p} q^p \Gamma(1-p)$$

$$4) \int (\sigma^{-qx} - 1 + qx) \frac{dx}{x^{p+1}} = \frac{1}{p(p+1)} q^{p+1} \Gamma(1-p)$$

$$5) \int \left(\sigma^{-qx} - 1 + qx - \frac{1}{2} q^2 x^2 \right) \frac{dx}{x^{p+1}} = \frac{q^{p+2}}{p(p+1)(p+2)} \Gamma(1-p)$$

$\left. \begin{array}{l} [0 < p < 1] \\ \text{Liouville, P. 21, 71.} \end{array} \right\}$

$$6) \int (\sigma^{-qx} - \sigma^{-rx}) \frac{dx}{x^{p+1}} = \frac{1}{p} \Gamma(1-p) (r^p - q^p) [p < 1] \quad (\text{IV}, 187).$$

$$7) \int (\sigma^{-ax^c} - \sigma^{-bx^c}) \frac{dx}{x^c} = \frac{1}{c-1} \Gamma\left(\frac{1}{c}\right) \{b^{1-\frac{1}{c}} - a^{1-\frac{1}{c}}\} [b > a > 0] \quad (\text{IV}, 187).$$

$$8) \int (\sigma^{-x} - 1)^q \sigma^{-bx} \frac{dx}{x^{q+1}} = \frac{-\pi}{\sin q\pi \cdot \Gamma(q+1)} \Delta^a \cdot b^q [q < a], = \frac{(-1)^q}{\Gamma(q+1)} \Delta^a \cdot b^q l b [q \text{ entier}] \quad (\text{IV}, 187).$$

$$9) \int (\sigma^{-rx} - 1)^q \sigma^{-px} \frac{dx}{x^{q+1}} = \frac{(-1)^{q+1} r^q}{\Gamma(q+1)} \Delta^a \cdot p l p \quad \text{V. T. 124, N. 19.}$$

$$10) \int \{ \sigma^{-bx} (\sigma^{-x} - 1)^a - (-x)^a \} \frac{dx}{x^{q+1}} = -\frac{\pi}{\Gamma(q+1)} \operatorname{Cosec} q\pi \cdot \Delta^a \cdot b^q \quad (\text{IV}, 188).$$

$$11) \int \left\{ \sigma^{-bx} (\sigma^{-x} - 1)^{a-1} - (-x)^{a-1} \left(1 - \frac{1}{2} (2b+a-1)x \right) \right\} \frac{dx}{x^{q+1}} = -\frac{\pi}{\Gamma(q+1)} \operatorname{Cosec} q\pi \cdot \Delta^{a-1} \cdot b^q \quad (\text{IV}, 188).$$

$$12) \int \left\{ \sigma^{-bx} (\sigma^{-x} - 1)^{a-1} - (-x)^{a-1} \left(1 - \frac{1}{2} (2b+a-2)x + \frac{1}{12} \{ 6b(b+a-2) + (a-2)(3a-7) \} x^2 \right) \right\} \frac{dx}{x^{q+1}} =$$

$$= -\frac{\pi}{\Gamma(q+1)} \operatorname{Cosec} q\pi \cdot \Delta^{a-1} \cdot b^q \quad (\text{IV}, 188). \text{ Dans 10) à 12) on a } a < q < a+1.$$

$$1) \int e^{-px} \frac{dx}{q+x} = -e^{pq} Ei(-pq) \text{ (VIII, 297).}$$

$$2) \int e^{px} \frac{dx}{xi+q} = \pi e^{-pq} + i e^{-pq} Ei(pq) \text{ (IV, 188).}$$

$$3) \int e^{-px} \frac{x^a dx}{q+x} = (-1)^{a+1} q^a e^{pq} Ei(-pq) + \frac{1}{p^a} \sum_1^a 1^{a-n/1} (-pq)^{n-1} \text{ (IV, 188).}$$

$$4) \int e^{-px} \frac{dx}{q-x} = e^{-pq} Ei(pq) \text{ (VIII, 297).}$$

$$5) \int e^{px} \frac{dx}{xi-q} = i e^{pq} Ei(-pq) \text{ (IV, 189).}$$

$$6) \int e^{-px} \frac{x^a dx}{q-x} = q^a e^{-pq} Ei(pq) - \frac{1}{p^a} \sum_1^a 1^{a-n/1} (pq)^{n-1} \text{ (IV, 189).}$$

$$7) \int e^{-px} \frac{dx}{q^2+x^2} = \frac{1}{q} \left\{ Ci(pq) \cdot Sin pq - Si(pq) \cdot Cos pq + \frac{1}{2} \pi Cos pq \right\} \text{ (VIII, 524).}$$

$$8) \int e^{-px} \frac{x dx}{q^2+x^2} = -Ci(pq) \cdot Cos pq - Si(pq) \cdot Sin pq + \frac{1}{2} \pi Sin pq \text{ (VIII, 524).}$$

$$9) \int e^{px} \frac{dx}{q^2+x^2} = \frac{\pi}{2q} e^{-pq} - \frac{1}{2qi} \{ e^{-pq} Ei(pq) - e^{pq} Ei(-pq) \} \text{ (IV, 189).}$$

$$10) \int e^{px} \frac{x dx}{q^2+x^2} = \frac{1}{2} \pi i e^{-pq} - \frac{1}{2} \{ e^{-pq} Ei(pq) + e^{pq} Ei(-pq) \} \text{ (IV, 189).}$$

$$11) \int e^{-px} \frac{x^{2a} dx}{q^2+x^2} = (-1)^a q^{2a-1} \left\{ Ci(pq) \cdot Sin pq - Si(pq) \cdot Cos pq + \frac{1}{2} \pi Cos pq \right\} + \\ + \frac{1}{p^{2a-1}} \sum_1^a 1^{2a-2n/1} (-p^2 q^2)^{n-1} \text{ (IV, 189).}$$

$$12) \int e^{-px} \frac{x^{2a+1} dx}{q^2+x^2} = (-1)^{a-1} q^{2a} \left\{ Ci(pq) \cdot Cos pq + Si(pq) \cdot Sin pq - \frac{1}{2} \pi Sin pq \right\} + \\ + \frac{1}{p^{2a}} \sum_1^a 1^{2a-2n+1/1} (-p^2 q^2)^{n-1} \text{ (IV, 189).}$$

$$13) \int e^{-px} \frac{dx}{1+x^2} = e^{tp} \sqrt{\pi} \cdot \left\{ 2 e^{tp} \sqrt{\pi} - \sqrt{\sum_1^{\infty} \frac{p^n}{1^{n/1}} \sum_1^n \frac{(-1)^{m-1}}{2m-1}} \right\} \text{ Raabe, Cr. B. 48, 127.}$$

$$14) \int e^{-px} \frac{dx}{q^2-x^2} = \frac{1}{2q} \{ e^{-pq} Ei(pq) - e^{pq} Ei(-pq) \} \text{ (VIII, 297).}$$

$$15) \int e^{-px} \frac{x dx}{q^2-x^2} = \frac{1}{2} \{ e^{-pq} Ei(pq) + e^{pq} Ei(-pq) \} \text{ (VIII, 297).}$$

$$16) \int e^{-px} \frac{x^{2a} dx}{q^2 - x^2} = \frac{1}{2} q^{2a-1} \{ e^{-pq} Ei(pq) - e^{pq} Ei(-pq) \} - \frac{1}{p^{2a-1}} \sum_1^a 1^{2a-2n+1} (p^2 q^2)^{n-1} \\ (IV, 190).$$

$$17) \int e^{-px} \frac{x^{2a+1} dx}{q^2 - x^2} = \frac{1}{2} q^{2a} \{ e^{pq} Ei(-pq) + e^{-pq} Ei(pq) \} - \frac{1}{p^{2a}} \sum_1^a 1^{2a-2n+1} (p^2 q^2)^{n-1} \\ (IV, 190).$$

$$18) \int e^{-px} \frac{dx}{q^2 - x^2} = \frac{1}{4q^2} \{ e^{-pq} Ei(pq) - e^{pq} Ei(-pq) + 2 Ci(pq).Sin pq - 2 Si(pq).Cos pq + \pi Cos pq \} \\ V. T. 91, N. 7, 14.$$

$$19) \int e^{-px} \frac{x dx}{q^2 - x^2} = \frac{1}{4q^2} \{ e^{pq} Ei(-pq) + e^{-pq} Ei(pq) - 2 Ci(pq).Cos pq - 2 Si(pq).Sin pq + \pi Sin pq \} \\ V. T. 91, N. 8, 15.$$

$$20) \int e^{-px} \frac{x^3 dx}{q^2 - x^2} = \frac{1}{4q} \{ e^{-pq} Ei(pq) - e^{pq} Ei(-pq) - 2 Ci(pq).Sin pq + 2 Si(pq).Cos pq - \pi Cos pq \} \\ V. T. 91, N. 7, 14.$$

$$21) \int e^{-px} \frac{x^3 dx}{q^2 - x^2} = \frac{1}{4} \{ e^{pq} Ei(-pq) + e^{-pq} Ei(pq) + 2 Ci(pq).Cos pq + 2 Si(pq).Sin pq - \pi Sin pq \} \\ V. T. 91, N. 8, 15.$$

$$22) \int e^{-px} \frac{x^{2a} dx}{q^2 - x^2} = \frac{1}{4} q^{2a-1} \{ e^{-pq} Ei(pq) - e^{pq} Ei(-pq) + 2 Ci(pq).Sin pq - 2 Si(pq).Cos pq + \pi Cos pq \} - \\ - \frac{1}{p^{2a-1}} \sum_1^a 1^{2a-2n+1} (p^2 q^2)^{n-1} V. T. 91, N. 11, 16.$$

$$23) \int e^{-px} \frac{x^{2a+1} dx}{q^2 - x^2} = \frac{1}{4} q^{2a} \{ e^{pq} Ei(-pq) + e^{-pq} Ei(pq) - 2 Ci(pq).Cos pq - 2 Si(pq).Sin pq + \pi Sin pq \} - \\ - \frac{1}{p^{2a-1}} \sum_1^a 1^{2a-2n+1} (p^2 q^2)^{n-1} V. T. 91, N. 12, 17.$$

$$24) \int e^{-px} \frac{x^{2a+3} dx}{q^2 - x^2} = \frac{1}{2} q^{2a-1} \{ e^{-pq} Ei(pq) - e^{pq} Ei(-pq) - 2 Ci(pq).Sin pq + 2 Si(pq).Cos pq - \pi Cos pq \} - \\ - \frac{1}{p^{2a-1}} \sum_1^a 1^{2a-2n+1} (p^2 q^2)^{n-1} V. T. 91, N. 11, 16.$$

$$25) \int e^{-px} \frac{x^{2a+3} dx}{q^2 - x^2} = \frac{1}{4} q^{2a} \{ e^{pq} Ei(-pq) + e^{-pq} Ei(pq) + 2 Ci(pq).Cos pq + 2 Si(pq).Sin pq - \pi Sin pq \} - \\ - \frac{1}{p^{2a}} \sum_1^a 1^{2a-2n+1} (p^2 q^2)^{n-1} V. T. 91, N. 12, 17.$$

$$26) \int e^{-x} \frac{x^a dx}{1+x^b} = \sum_0^\infty (-1)^n 1^{a+n b/1} \text{ De Morgan, Int. Calc.}$$

- 1) $\int e^{-px} \frac{dx}{(q+x)^2} = \frac{1}{q} + p e^{pq} Ei(-pq)$ V. T. 31, N. 16.
- 2) $\int e^{-px} \frac{dx}{(q+x)^a} = (-1)^a \frac{p^{a-1}}{1^{a-1/1}} e^{pq} Ei(-pq) + \frac{1}{1^{a-1/1} q^{a-1}} \sum_1^{a-1} 1^{a-n-1/1} (-pq)^{n-1}$ (IV, 190).
- 3) $\int e^{-px} \frac{x^{q-1} dx}{(1+rx)^a} = \frac{1}{p^q} \Gamma(q) \sum_0^{\infty} \frac{a^{n/1}}{1^{n/1}} \frac{q^{n/1}}{p^n} r^n$ (VIII, 513).
- 4) $\int e^{-px} \frac{dx}{(q-x)^2} = -\frac{1}{q} + p e^{-pq} Ei(pq)$ V. T. 31, N. 14.
- 5) $\int e^{-px} \frac{dx}{(q-x)^a} = \frac{p^{a-1}}{1^{a-1/1}} e^{-pq} Ei(pq) - \frac{1}{1^{a-1/1} q^{a-1}} \sum_1^{a-1} 1^{a-n-1/1} (pq)^{n-1}$ (IV, 190).
- 6) $\int e^{-px} \frac{dx}{(q^2+x^2)^2} = \frac{1}{2q^3} \left\{ Ci(pq) \cdot Sin pq - Si(pq) \cdot Cos pq + \frac{1}{2} \pi Cos pq + pq \left(Ci(pq) \cdot Cos pq + \right. \right.$
 $\left. \left. + Si(pq) \cdot Sin pq - \frac{1}{2} \pi Sin pq \right) \right\}$ (IV, 191).
- 7) $\int e^{-px} \frac{x dx}{(q^2+x^2)^2} = \frac{1}{2q^3} \left\{ 1 - pq \left(Ci(pq) \cdot Sin pq - Si(pq) \cdot Cos pq + \frac{1}{2} \pi Cos pq \right) \right\}$ (IV, 191).
- 8) $\int e^{-px} \frac{dx}{(q^2-x^2)^2} = \frac{1}{4q^3} \left\{ (pq-1) e^{pq} Ei(-pq) + (1+pq) e^{-pq} Ei(pq) \right\}$ (IV, 191).
- 9) $\int e^{-px} \frac{x dx}{(q^2-x^2)^2} = \frac{1}{4q^3} \left(1 + pq \left\{ e^{-pq} Ei(pq) - e^{pq} Ei(-pq) \right\} \right)$ (IV, 191).
- 10) $\int \left(e^{-px} - \frac{1}{1+qx} \right) \frac{dx}{x} = -\Lambda + l \frac{q}{p}$ (VIII, 533).
- 11) $\int \left(e^{-px} - \frac{1}{1+q^2 x^2} \right) \frac{dx}{x} = -\Lambda + l \frac{q}{p}$ (VIII, 534).
- 12) $\int \left(e^{-x^2} - \frac{1}{1+x^2} \right) \frac{dx}{x} = -\frac{1}{2} \Lambda$ (VIII, 682).
- 13) $\int \left(e^{-x^{2^a}} - \frac{1}{1+x^2} \right) \frac{dx}{x} = -\frac{1}{2^a} \Lambda$ (VIII, 702).
- 14) $\int \left(e^{-x^{2^a}} - \frac{1}{1+x^{2^a+1}} \right) \frac{dx}{x} = -\frac{1}{2^a} \Lambda$ (VIII, 702).
- 15) $\int \left(e^{-x} - \frac{1}{(1+x)^p} \right) \frac{dx}{x} = Z'(p)$ (VIII, 601).
- 16) $\int \left(\frac{e^{-x}-1}{x} + \frac{1}{1+x} \right) \frac{dx}{x} = \Lambda - 1$ (IV, 193).

$$17) \int \left\{ \frac{e^{-x}}{\left(1 - \frac{1}{q} x\right)^q} + \frac{e^{x}}{\left(1 + \frac{1}{q} x\right)^q} \right\} dx = \frac{2\pi}{\Gamma(q)} \left(\frac{q}{e}\right)^q \quad (\text{IV, 193}).$$

$$18) \int e^{-px} \frac{dx}{q^3 + q^2 x + qx^2 + x^3} = \frac{1}{2q^3} \left\{ \text{Ci}(pq) \cdot (\text{Sin} pq + \text{Cos} pq) + \left\{ \text{Si}(pq) - \frac{1}{2}\pi \right\} (\text{Sin} pq - \text{Cos} pq) - \right. \\ \left. - e^{pq} \text{Ei}(-pq) \right\} \quad \text{V. T. 91, N. 1, 7, 8.}$$

$$19) \int e^{-px} \frac{x dx}{q^3 + q^2 x + qx^2 + x^3} = \frac{1}{2q} \left\{ \text{Ci}(pq) \cdot (\text{Sin} pq - \text{Cos} pq) + \left(\frac{1}{2}\pi - \text{Si}(pq) \right) (\text{Sin} pq + \text{Cos} pq) + \right. \\ \left. + e^{pq} \text{Ei}(-pq) \right\} \quad \text{V. T. 91, N. 1, 7, 8.}$$

$$20) \int e^{-px} \frac{x^2 dx}{q^3 + q^2 x + qx^2 + x^3} = \frac{1}{2} \left\{ -\text{Ci}(pq) \cdot (\text{Sin} pq + \text{Cos} pq) + \left(\frac{1}{2}\pi - \text{Si}(pq) \right) (\text{Sin} pq - \text{Cos} pq) - \right. \\ \left. - e^{pq} \text{Ei}(-pq) \right\} \quad \text{V. T. 91, N. 1, 7, 8.}$$

$$21) \int e^{-px} \frac{dx}{q^3 - q^2 x + qx^2 - x^3} = \frac{1}{2q^3} \left\{ \text{Ci}(pq) \cdot (\text{Sin} pq - \text{Cos} pq) - \left(\text{Si}(pq) - \frac{1}{2}\pi \right) (\text{Sin} pq + \text{Cos} pq) + \right. \\ \left. + e^{-pq} \text{Ei}(pq) \right\} \quad \text{V. T. 91, N. 4, 7, 8.}$$

$$22) \int e^{-px} \frac{x dx}{q^3 - q^2 x + qx^2 - x^3} = \frac{1}{2q} \left\{ -\text{Ci}(pq) \cdot (\text{Sin} pq + \text{Cos} pq) + \left(\frac{1}{2}\pi - \text{Si}(pq) \right) (\text{Sin} pq - \text{Cos} pq) + \right. \\ \left. + e^{-pq} \text{Ei}(pq) \right\} \quad \text{V. T. 91, N. 4, 7, 8.}$$

$$23) \int e^{-px} \frac{x^2 dx}{q^3 - q^2 x + qx^2 - x^3} = \frac{1}{2} \left\{ \text{Ci}(pq) \cdot (\text{Cos} pq - \text{Sin} pq) + \left(\text{Si}(pq) - \frac{1}{2}\pi \right) (\text{Sin} pq + \text{Cos} pq) + \right. \\ \left. + e^{-pq} \text{Ei}(pq) \right\} \quad \text{V. T. 91, N. 4, 7, 8.}$$

$$1) \int \frac{1}{e^x + 1} \frac{dx}{x} = \infty =$$

$$2) \int \frac{1}{e^x - 1} \frac{dx}{x} \quad (\text{VIII, 542}).$$

$$3) \int \frac{1 - e^{-x}}{e^x + 1} \frac{dx}{x} = \frac{\pi}{2} \quad \text{V. T. 127, N. 3.}$$

$$4) \int \frac{1 - e^{(1-q)x}}{e^x + 1} \frac{dx}{x} = l \left\{ \frac{\Gamma\left(\frac{q+1}{2}\right)}{\Gamma\left(\frac{q}{2}\right)} \sqrt{\pi} \right\} \text{ V. T. 127, N. 4.}$$

$$5) \int \frac{e^{-qx} - e^{(q-1)x}}{e^{-x} + 1} \frac{dx}{x} = l \cot \frac{q\pi}{2} \text{ V. T. 130, N. 6.}$$

$$6) \int \frac{e^{-qx} - e^{-px}}{e^{-x} + 1} \frac{dx}{x} = l \frac{\Gamma\left(\frac{q}{2}\right) \Gamma\left(\frac{p+1}{2}\right)}{\Gamma\left(\frac{p}{2}\right) \Gamma\left(\frac{q+1}{2}\right)} \text{ V. T. 127, N. 5.}$$

$$7) \int \frac{e^{-px} - e^{(p-q)x}}{e^{-qx} + 1} \frac{dx}{x} = l \cot \frac{p\pi}{2q} \text{ V. T. 130, N. 9.}$$

$$8) \int \frac{1 - e^{-qx}}{e^{-x} + 1} e^{-(p+1)x} \frac{dx}{x} = l \frac{\Gamma\left(\frac{p+1}{2}\right) \Gamma\left(\frac{p+q}{2} + 1\right)}{\Gamma\left(\frac{p}{2} + 1\right) \Gamma\left(\frac{p+q+1}{2}\right)} \text{ V. T. 127, N. 6.}$$

$$9) \int \frac{(e^{qx} - e^{-qx})^2}{e^x + 1} \frac{dx}{x} = -l(q\pi \cot q\pi) \text{ V. T. 130, N. 7.}$$

$$10) \int \frac{e^{-px} - e^{-qx}}{e^{-rx} + 1} \frac{1 + e^{(p+q-r)x}}{x} dx = l \left(\gamma \frac{q\pi}{2r} \cot \frac{p\pi}{2r} \right) \text{ V. T. 130, N. 10.}$$

$$11) \int \frac{e^{-px} - e^{-qx}}{e^{-x} + 1} \frac{1 + e^{-(2a+1)x}}{x} dx = l \frac{\left(\frac{q}{2}\right)^{a+1/2} \left(\frac{p+1}{2}\right)^{a/2}}{\left(\frac{q+1}{2}\right)^{a/2} \left(\frac{p}{2}\right)^{a+1/2}} \text{ V. T. 127, N. 7.}$$

$$12) \int \frac{1 - e^{-px}}{1 - e^x} \frac{1 - e^{-qx}}{x} dx = l \frac{\Gamma(p+1) \Gamma(q+1)}{\Gamma(p+q+1)} \text{ V. T. 127, N. 8.}$$

$$13) \int \frac{1 - e^{-px}}{1 - e^{-x}} \frac{1 - e^{-qx}}{x} e^{-rx} dx = l \frac{\Gamma(r) \Gamma(p+q+r)}{\Gamma(p+r) \Gamma(q+r)} \text{ V. T. 127, N. 9.}$$

$$14) \int \frac{(1 - e^{-px})(1 - e^{-qx})(1 - e^{-rx})}{1 - e^{-x}} e^{-sx} \frac{dx}{x} = l \frac{\Gamma(p+q+s) \Gamma(p+r+s) \Gamma(q+r+s) \Gamma(s)}{\Gamma(p+s) \Gamma(q+s) \Gamma(r+s) \Gamma(p+q+r+s)} \text{ V. T. 127, N. 11.}$$

$$15) \int \frac{(e^{qx} - e^{-qx})^2}{1 - e^{px}} \frac{dx}{x} = l \left(\frac{p}{2q\pi} \sin \frac{2q\pi}{p} \right) \text{ V. T. 128, N. 10.}$$

$$16) \int \frac{1 - e^{(1-q)x}}{1 - e^{-x}} \frac{1 - e^{(1-q)x}}{e^{1/2x}} \frac{dx}{x} = (2q-2)l2 \text{ V. T. 132, N. 15.}$$

$$17) \int \frac{e^x - 1}{e^x + 1} \frac{1}{e^x + e^{-x}} \frac{dx}{x} = \frac{1}{2} l 2 \text{ (VIII, 542).}$$

$$18) \int \frac{1 - e^{-x}}{e^x + 1} \frac{e^{-x}}{e^x + e^{-x}} \frac{dx}{x} = l \frac{\pi}{2\sqrt{2}} \text{ V. T. 130, N. 17.}$$

$$1) \int \left\{ \frac{1}{1 - e^{-x}} - \frac{1}{x} \right\} e^{-x} dx = A \text{ V. T. 127, N. 15.}$$

$$2) \int \left\{ \frac{e^{-x}}{x} - \frac{e^{-qx}}{e^x - 1} \right\} dx = Z'(1+q) \text{ V. T. 127, N. 16.}$$

$$3) \int \left\{ \frac{e^{-qx}}{1 - e^{-x}} - \frac{e^{-px}}{x} \right\} dx = lp - Z'(q) \text{ V. T. 127, N. 17.}$$

$$4) \int \left\{ \frac{b}{x} - \frac{e^{(1-q)x}}{1 - e^{-\frac{x}{b}}} \right\} e^{-x} dx = bZ'(bq) - b l b \text{ V. T. 132, N. 21.}$$

$$5) \int \left\{ \frac{1}{2} - \frac{1}{1 + e^{-\frac{x}{2}}} \right\} e^{-x} \frac{dx}{x} = \frac{1}{2} l \frac{\pi}{4} \text{ (IV, 195). } 6) \int \left\{ \frac{1}{2} e^{-x} - \frac{1}{e^x + 1} \right\} \frac{dx}{x} = -\frac{1}{2} l \pi \text{ (IV, 195).}$$

$$7) \int \left\{ q - \frac{1 - e^{-qx}}{1 - e^{-x}} \right\} e^{-x} \frac{dx}{x} = l \Gamma(q+1) \text{ (IV, 195).}$$

$$8) \int \left\{ q e^{-x} - \frac{e^{-px} - e^{-(p+q)x}}{e^x - 1} \right\} \frac{dx}{x} = l \frac{\Gamma(p+q+1)}{\Gamma(p+1)} \text{ V. T. 127, N. 19.}$$

$$9) \int \left\{ \frac{e^{-qx}}{1 - e^{-x}} - \frac{e^{-px} + (p-1)e^{-\frac{1}{2}px}}{1 - e^{-px}} \right\} \frac{dx}{x} = \frac{1}{2} (p-1) l 2 + \left(\frac{1}{2} - pq \right) lp \text{ V. T. 132, N. 24.}$$

$$10) \int \left\{ \frac{e^x}{e^{2x} - 1} - \frac{1}{2x} \right\} \frac{dx}{x} = -\frac{1}{2} l 2$$

$$11) \int \left\{ \frac{q}{e^{qx} - e^{-qx}} - \frac{p}{e^{px} - e^{-px}} \right\} \frac{dx}{x} = \frac{p-q}{2} l 2$$

Winckler, Sitz. Ber. Wien. B. 21, 389.

$$12) \int \left\{ 1 - e^{-x} - \frac{(1 - e^{-qx})(1 - e^{-px})}{1 - e^{-x}} \right\} \frac{dx}{x} = l \frac{\Gamma(p)\Gamma(q)}{\Gamma(p+q)} \text{ V. T. 130, N. 18.}$$

$$13) \int \left\{ ap - \frac{1}{2}(a-1) - \frac{a}{1 - e^{-x}} - \frac{e^{(1-p)x}}{1 - e^{-\frac{x}{a}}} \right\} e^{-x} \frac{dx}{x} = \sum_0^{a-1} l \Gamma\left(p - \frac{n}{a} + 1\right) \text{ (IV, 196).}$$

$$14) \int \left\{ \frac{a-1}{2} + \frac{a-1}{1 - e^{-x}} + \frac{e^{(1-p)x}}{1 - e^{-\frac{x}{a}}} + \frac{e^{-apx}}{1 - e^{-x}} \right\} e^{-x} \frac{dx}{x} = \frac{1}{2} (a-1) l 2 \pi - \left(ap + \frac{1}{2} \right) la \text{ (IV, 196).}$$

$$15) \int \left\{ \frac{e^{(1-p)x}}{1-e^x} - \frac{e^{(1-p)qx}}{1-e^{qx}} - \frac{e^x}{1-e^x} + \frac{e^{qx}}{1-e^{qx}} \right\} \frac{dx}{x} = q \, l p \quad (\text{IV, 196}).$$

$$16) \int \left\{ \frac{1}{e^x-1} - \frac{p e^{-px}}{1-e^{-px}} + \left(pq - \frac{p+1}{2} \right) e^{-px} + (1-pq) e^{-x} \right\} \frac{dx}{x} = \frac{p-1}{2} l 2\pi + \left(\frac{1}{2} - pq \right) l p$$

V. T. 130, N. 21.

$$17) \int \left\{ \frac{e^{-qx}}{1-e^{-x}} - \frac{e^{-pqx}}{1-e^{-px}} - \frac{p-1}{1-e^{-px}} e^{-px} - \frac{p-1}{2} e^{-px} \right\} \frac{dx}{x} = \frac{p-1}{2} l 2\pi + \left(\frac{1}{2} - pq \right) l p$$

V. T. 130, N. 22.

$$18) \int \left\{ q e^{-px} - \frac{1}{p} e^{-x} - \frac{1}{p} \frac{e^p - e^{-px}}{1-e^{-x}} \right\} \frac{dx}{x} = \frac{1}{p} l \Gamma(pq) - q l p$$

$$19) \int \left\{ \frac{a}{q} p - \frac{a(a-1)}{2} \frac{r}{q} - a - \frac{a}{1-e^{-x}} + \frac{1-e^{-(\frac{p-1}{q})x}}{1-e^{-x}} \frac{1-e^{-\frac{r}{q}x}}{1-e^{-\frac{r}{q}x}} \right\} e^{-x} \frac{dx}{x} = \sum_{n=0}^{a-1} l \Gamma\left(\frac{p+nr}{q}\right)$$

$$20) \int \left\{ \frac{a}{q} \left(p + \frac{ar-q-r}{2} \right) e^{-qx} - \frac{1}{2} a e^{-qx} - \frac{a}{e^{qx}-1} + \frac{1-e^{-arx}}{1-e^{-qx}} \frac{e^{-px}}{1-e^{-rx}} \right\} \frac{dx}{x} = \sum_{n=0}^{a-1} l \Gamma\left(\frac{p+nr}{q}\right)$$

$$21) \int \left\{ \frac{1}{2} \left(\frac{ar}{q} e^{-rx} - a e^{-qx} \right) + \frac{ar}{q(e^{rx}-1)} - \frac{a}{e^{qx}-1} \right\} \frac{dx}{x} = \frac{a}{q} \left(p + \frac{ar-q-r}{2} \right) l \frac{q}{r} + \sum_{n=0}^{a-1} l \Gamma\left(\frac{p+nr}{q}\right) - \sum_{n=0}^{ar-1} l \Gamma\left(\frac{p+nr}{r}\right) \quad \text{Sur 18) à 21) voyez Winckler, Sitz. Ber. Wien. B. 21, 389.}$$

$$22) \int \left\{ \frac{1}{1-e^{-x}} - \frac{2-e^{-x}}{2x} - \frac{1-e^{-x}}{2} \right\} e^{-x} \frac{dx}{x} = 0 \quad (\text{IV, 195}).$$

$$23) \int \left\{ \frac{1}{e^x-1} - \frac{1}{e^{1x}-1} - \frac{e^{-\frac{1}{2}x}}{x} + \frac{e^{-x}}{2x} \right\} \frac{dx}{x} = 0 \quad (\text{IV, 196}).$$

$$24) \int \left\{ \frac{1}{1-e^{-x}} - \frac{1}{x} - \frac{1}{2} \right\} e^{-\frac{1}{2}x} \frac{dx}{x} = \frac{1}{2} (1-l 2) = \quad 25) \int \left\{ \frac{1}{1-e^{-x}} - \frac{1}{2x} - \frac{1}{2} \right\} e^{-x} \frac{dx}{x} \quad (\text{IV, 195}).$$

$$26) \int \left\{ \left(p-1 - \frac{1}{1-e^{-x}} \right) e^{-x} + \left(\frac{1}{2} + \frac{1}{x} \right) e^{-px} \right\} \frac{dx}{x} = \left(p - \frac{1}{2} \right) l p - p + \frac{1}{2} l 2\pi \quad (\text{IV, 195}).$$

$$27) \int \left\{ \left(\frac{1}{x} + \frac{1}{2} \right) e^{-\frac{1}{2}x} - \left(\frac{1}{2} + \frac{1}{1-e^{-x}} \right) e^{-x} \right\} \frac{dx}{x} = \frac{1}{2} (l 2\pi - 1) \quad (\text{IV, 195}).$$

$$28) \int \left\{ p e^{-x} - \frac{1}{x} e^{-px} - \frac{1}{2} e^{-px} - \frac{1}{e^x-1} \right\} \frac{dx}{x} = \left(p + \frac{1}{2} \right) l p - p + \frac{1}{2} l 2\pi \quad (\text{IV, 195}).$$

$$29) \int \left\{ \frac{1}{2} e^{-x} + \frac{1}{x} e^{-x} - \frac{1}{e^x-1} \right\} \frac{dx}{x} = \frac{1}{2} l 2\pi - 1 = \quad 30) \int \left\{ \frac{1}{x} e^{-x} - \frac{1}{2} \frac{e^{-x}+1}{e^x-1} \right\} \frac{dx}{x} \quad (\text{IV, 196}).$$

F. Alg. rat. fract. à dén. mon.;

Exp. bin. $e^{ax} \pm 1$ en dén. A plusieurs termes.

TABLE 94, suite.

Lim. 0 et ∞ .

$$31) \int \left\{ \frac{1}{x} e^{-x} - x e^{-x} - \frac{1}{2} \frac{e^{-x} + 1}{e^x - 1} \right\} \frac{dx}{x} = \frac{1}{2} i 2\pi = \quad 32) \int \left\{ \frac{1}{x} - \frac{1}{2} e^{-x} - \frac{1}{e^x - 1} \right\} \frac{dx}{x} \quad (\text{IV}, 196).$$

$$33) \int \left\{ \left(q - \frac{1}{2} \right) \frac{e^{-rx} - e^{-px}}{x} + \frac{p e^{-pqx}}{1 - e^{-px}} - \frac{r e^{-qrx}}{1 - e^{-rx}} \right\} \frac{dx}{x} = (r - p) \left\{ \frac{1}{2} - q + \frac{1}{2} i 2\pi - i \Gamma(q) \right\}$$

V. T. 131, N. 13.

F. Alg. rat. fract. à dén. monôme.

Exp. binôme $e^{ax} \pm e^{-ax}$ en dén.

TABLE 95.

Lim. 0 et ∞ .

$$1) \int \frac{e^x - e^{-x}}{e^{2x} + e^{-2x}} \frac{dx}{x} = i T_9 \frac{3\pi}{8} \quad \text{V. T. 128, N. 3.}$$

$$2) \int \frac{1 - e^{2(q-p)x}}{e^{qx} + e^{(q-1)p x}} \frac{dx}{x} = i \text{Cot} \frac{q\pi}{4p} \quad \text{V. T. 128, N. 6.}$$

$$3) \int \frac{e^{qx} - e^{-qx}}{e^{px} + e^{-px}} \frac{dx}{x} = i T_9 \left(\frac{p+q}{4p} \pi \right) \quad \text{V. T. 128, N. 5.}$$

$$4) \int \frac{(1 - e^{-x})^2}{e^x + e^{-x}} \frac{dx}{x} = i \frac{4}{\pi} \quad \text{V. T. 128, N. 2.} \quad 5) \int \frac{(e^{qx} - e^{-qx})^2}{e^{px} - e^{-px}} \frac{dx}{x} = i \text{Sec} \frac{q\pi}{p} \quad (\text{VIII}, 542).$$

$$6) \int \frac{(1 - e^{(q-p)x})^2}{e^{qx} - e^{(q-1)p x}} \frac{dx}{x} = i \text{Cosec} \frac{q\pi}{2p} \quad \text{V. T. 128, N. 9.}$$

$$7) \int \frac{(e^{qx} - e^{-qx})^2}{e^x - e^{-x}} e^{-x} \frac{dx}{x} = i (q\pi \text{Cosec} q\pi) \quad \text{V. T. 130, N. 13.}$$

$$8) \int \frac{1 - e^{-qx}}{e^x - e^{-x}} \frac{1 - e^{-(q+1)x}}{x} dx = q i 2 \quad [q > 1] \quad \text{V. T. 128, N. 12.}$$

$$9) \int \frac{e^{qx} + e^{-qx}}{e^{rx} + e^{-rx}} \frac{dx}{x^p} = \Gamma(1-p) \sum_{n=0}^{\infty} (-1)^n \left\{ \frac{1}{\{(2n+1)r-q\}^{1-p}} + \frac{1}{\{(2n+1)r+q\}^{1-p}} \right\} \quad (\text{VIII}, 488*).$$

$$10) \int \frac{e^{qx} - e^{-qx}}{e^{rx} - e^{-rx}} \frac{dx}{x^p} = \Gamma(1-p) \sum_{n=0}^{\infty} \left\{ \frac{1}{\{(2n+1)r-q\}^{1-p}} - \frac{1}{\{(2n+1)r+q\}^{1-p}} \right\} \quad (\text{VIII}, 488*).$$

Dans 9) et 10) on a $p < 1$.

$$11) \int \left\{ \frac{x}{e^x - e^{-x}} - \frac{1}{2} \right\} \frac{dx}{x^2} = -\frac{1}{2} i 2 \quad (\text{VIII}, 437).$$

$$12) \int \left\{ \frac{p}{e^{px} - e^{-px}} - \frac{q}{e^{qx} - e^{-qx}} \right\} \frac{dx}{x} = \frac{1}{2} (q - p) i 2 \quad (\text{VIII}, 437).$$

$$1) \int \frac{e^{-px} - e^{-qx}}{e^x + e^{-x} + 2 \cos \frac{a\pi}{b}} \frac{dx}{x} = \operatorname{Cosec} \frac{a\pi}{b} \sum_1^{b-1} (-1)^{n-1} \sin \frac{na\pi}{b} \cdot l \frac{\Gamma\left(\frac{b+q+n}{2b}\right) \Gamma\left(\frac{p+n}{2b}\right)}{\Gamma\left(\frac{b+p+n}{2b}\right) \Gamma\left(\frac{q+n}{2b}\right)} \left[\begin{smallmatrix} a+b \\ \text{impair} \end{smallmatrix} \right],$$

$$= \operatorname{Cosec} \frac{a\pi}{b} \sum_1^{\frac{1}{2}(b-1)} (-1)^{n-1} \sin \frac{na\pi}{b} \cdot l \frac{\Gamma\left(\frac{b+q-n}{b}\right) \Gamma\left(\frac{p+n}{b}\right)}{\Gamma\left(\frac{b+p-n}{b}\right) \Gamma\left(\frac{q+n}{b}\right)} \left[\begin{smallmatrix} a+b \\ \text{pair} \end{smallmatrix} \right] \text{V. T. 130, N. 2.}$$

$$2) \int \frac{(1 - e^{-x})^2}{e^x + e^{-x} + 2 \cos \frac{a\pi}{b}} \frac{dx}{x} = \operatorname{Cosec} \frac{a\pi}{b} \sum_1^{b-1} (-1)^{n-1} \sin \frac{na\pi}{b} \cdot l \frac{\left\{ \Gamma\left(\frac{b+n+1}{2b}\right) \right\}^2 \Gamma\left(\frac{n+2}{2b}\right) \Gamma\left(\frac{n}{2b}\right)}{\left\{ \Gamma\left(\frac{n+1}{2b}\right) \right\}^2 \Gamma\left(\frac{n+b}{2b}\right) \Gamma\left(\frac{n+b+2}{2b}\right)} \left[\begin{smallmatrix} a+ \\ \text{impa} \end{smallmatrix} \right]$$

$$= \operatorname{Cosec} \frac{a\pi}{b} \sum_1^{\frac{1}{2}(b-1)} (-1)^{n-1} \sin \frac{na\pi}{b} \cdot l \frac{\left\{ \Gamma\left(\frac{b-n+1}{b}\right) \right\}^2 \Gamma\left(\frac{n+2}{b}\right) \Gamma\left(\frac{n}{b}\right)}{\left\{ \Gamma\left(\frac{n+1}{b}\right) \right\}^2 \Gamma\left(\frac{b-n}{b}\right) \Gamma\left(\frac{b-n+2}{b}\right)} \left[\begin{smallmatrix} a+b \\ \text{pair} \end{smallmatrix} \right] \text{V. T. 130,}$$

$$3) \int \left\{ e^{-x} \operatorname{Tg} \frac{a\pi}{2b} - \frac{2e^{-px} \sin \frac{a\pi}{b}}{e^x + e^{-x} + 2 \cos \frac{a\pi}{b}} \right\} \frac{dx}{x} = \operatorname{Tg} \frac{a\pi}{2b} \cdot l 2b + 2 \sum_1^{b-1} (-1)^{n-1} \sin \frac{na\pi}{b} \cdot l \frac{\Gamma\left(\frac{b+p+n}{2b}\right)}{\Gamma\left(\frac{p+n}{2b}\right)} \left[\begin{smallmatrix} a+b \\ \text{impair} \end{smallmatrix} \right],$$

$$= \operatorname{Tg} \frac{a\pi}{2b} \cdot l 2b + 2 \sum_1^{\frac{1}{2}(b-1)} (-1)^{n-1} \sin \frac{na\pi}{b} \cdot l \frac{\Gamma\left(\frac{b+p-n}{b}\right)}{\Gamma\left(\frac{p+n}{b}\right)} \left[\begin{smallmatrix} a+b \\ \text{pair} \end{smallmatrix} \right] \text{V. T. 130, N. 4.}$$

$$4) \int \frac{1}{e^x + e^{-x} + 2 \cos \lambda} \frac{dx}{x^{1-q}} = \operatorname{Cosec} \lambda \cdot \Gamma(q) \sum_1^\infty (-1)^{n-1} \frac{\sin n\lambda}{n^q} \text{V. T. 130, N. 1.}$$

$$5) \int \frac{e^x + e^{-x}}{e^x + e^{-x} + 2 \cos \lambda} \frac{dx}{x^{1-q}} = \operatorname{Sec} \frac{1}{2} \lambda \cdot \Gamma(q) \sum_1^\infty (-1)^{n-1} \frac{\cos \left\{ (n - \frac{1}{2}) \lambda \right\}}{n^q} \text{V. T. 130, N. 5.}$$

$$6) \int \left\{ q - \frac{1}{2} + \frac{(1 - e^{-x})(1 - qx) - x e^{-x}}{e^{-1/2} x + 1 - 2 e^{-x}} e^{(1-q)x} \right\} e^{-x} \frac{dx}{x} = q - \frac{1}{2} + l \Gamma(q) - \frac{1}{2} l 2\pi$$

V. T. 128, N. 15.

$$7) \int \left\{ \frac{p + q e^{-mx}}{r e^{mx} + s + t e^{-mx}} - \frac{p + q e^{-m_1 x}}{r e^{m_1 x} + s + t e^{-m_1 x}} \right\} \frac{dx}{x} = \frac{p + q}{r + s + t} l \frac{m_1}{m} \text{(VIII, 436).}$$

- 1) $\int \frac{1}{e^{\pi x} + e^{-\pi x}} \frac{dx}{1+x^2} = 1 - \frac{1}{4}\pi$ (IV, 199).
- 2) $\int \frac{1}{e^{\frac{1}{2}\pi x} + e^{-\frac{1}{2}\pi x}} \frac{dx}{1+x^2} = \frac{1}{2} \log 2$ (VIII, 636).
- 3) $\int \frac{1}{e^{\frac{1}{2}\pi x} + e^{-\frac{1}{2}\pi x}} \frac{dx}{1+x^2} = \frac{1}{2\sqrt{2}} \left(\pi - \log \frac{\sqrt{2}+1}{\sqrt{2}-1} \right)$ (IV, 200).
- 4) $\int \frac{1}{e^{\pi x} + e^{-\pi x}} \frac{dx}{q^2 + x^2} = \frac{1}{4q} \left\{ Z' \left(\frac{q}{2} + \frac{3}{4} \right) - Z' \left(\frac{q}{2} + \frac{1}{4} \right) \right\}$ (IV, 199).
- 5) $\int \frac{1}{e^{px} + e^{-px}} \frac{dx}{q^2 + x^2} = \frac{\pi}{q} \sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{2pq + (2n-1)\pi}$ (VIII, 636*).
- 6) $\int \frac{e^{px} - e^{-px}}{e^{px} + e^{-px}} \frac{x dx}{q^2 + x^2} = \pi \sum_{n=1}^{\infty} \frac{1}{2pq + (2n-1)\pi}$ (VIII, 636*).
- 7) $\int \frac{x}{e^{\pi x} - e^{-\pi x}} \frac{dx}{1+x^2} = \frac{1}{2} \log 2 - \frac{1}{4}$ (VIII, 636).
- 8) $\int \frac{x}{e^{\frac{1}{2}\pi x} - e^{-\frac{1}{2}\pi x}} \frac{dx}{1+x^2} = \frac{1}{4}\pi - \frac{1}{2}$ (IV, 200).
- 9) $\int \frac{x}{e^{\frac{1}{2}\pi x} - e^{-\frac{1}{2}\pi x}} \frac{dx}{1+x^2} = \frac{1}{4}\pi \sqrt{2-1} + \frac{1}{2\sqrt{2}} \log \frac{\sqrt{2}+1}{\sqrt{2}-1}$ (IV, 200).
- 10) $\int \frac{e^{px} - e^{-px}}{e^{\pi x} - e^{-\pi x}} \frac{dx}{1+x^2} = -\frac{1}{2}p \cos p + \frac{1}{2} \sin p \cdot \log \{2(1+\cos p)\} \quad [p \leq \pi]$ (VIII, 636).
- 11) $\int \frac{e^{px} - e^{-px}}{e^{\frac{1}{2}\pi x} - e^{-\frac{1}{2}\pi x}} \frac{dx}{1+x^2} = \frac{1}{2}\pi \sin p + \frac{1}{2} \cos p \cdot \log \frac{1-\sin p}{1+\sin p} \quad \left[p \leq \frac{1}{2}\pi \right]$ (VIII, 637).
- 12) $\int \frac{e^{px} + e^{-px}}{e^{\pi x} - e^{-\pi x}} \frac{x dx}{1+x^2} = \frac{1}{2}(p \sin p - 1) + \frac{1}{2} \cos p \cdot \log \{2(1+\cos p)\} \quad [p \leq \pi]$ (VIII, 636).
- 13) $\int \frac{e^{px} + e^{-px}}{e^{\frac{1}{2}\pi x} - e^{-\frac{1}{2}\pi x}} \frac{x dx}{1+x^2} = \frac{1}{2}\pi \cos p - 1 + \frac{1}{2} \sin p \cdot \log \frac{1+\sin p}{1-\sin p} \quad \left[p < \frac{1}{2}\pi \right]$ (VIII, 637).
- 14) $\int \frac{x}{e^{\frac{1}{2}\pi x} - 1} \frac{dx}{1+x^2} = \frac{1}{2}A - \frac{1}{4}$ (IV, 200).
- 15) $\int \frac{x}{e^{\frac{1}{2}\pi q x} - 1} \frac{dx}{1+x^2} = \frac{1}{2} \log q + \frac{1}{4q} - \frac{1}{2} Z'(1+q)$ (IV, 200).
- 16) $\int \frac{x}{e^{px} - e^{-px}} \frac{dx}{q^2 + x^2} = \frac{\pi}{4pq} + \frac{\pi}{2} \sum_{n=1}^{\infty} \frac{(-1)^n}{pq + n\pi}$ (VIII, 635*).

- $$17) \int \frac{e^{px} + e^{-px}}{e^{px} - e^{-px}} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2pq} + \pi \sum_{n=1}^{\infty} \frac{1}{pq + n\pi} \quad (\text{VIII, 685*}).$$
- $$18) \int \frac{e^{(r-p)x} - e^{(p-r)x}}{e^{rx} - e^{-rx}} \frac{dx}{q^2 + x^2} = \frac{\pi}{q} \sum_{n=1}^{\infty} \frac{1}{qr + n\pi} \sin \frac{np\pi}{r}$$
- $$19) \int \frac{e^{(r-p)x} + e^{(p-r)x}}{e^{rx} - e^{-rx}} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2qr} + \pi \sum_{n=1}^{\infty} \frac{1}{qr + n\pi} \cos \frac{np\pi}{r} \quad \left. \vphantom{\int} \right\} [p^2 < r^2] \quad (\text{VIII, 685*}).$$
- $$20) \int \frac{x}{e^{2\pi x} - 1} \frac{dx}{q^2 + x^2} = -\frac{1}{4q} + \frac{1}{2} \log q - \frac{1}{2} Z'(q) \quad (\text{IV, 200}).$$
- $$21) \int \frac{x}{e^{2\pi x} - 1} \frac{dx}{q^2 - x^2} = \frac{1}{4q^3} \sum_{n=0}^{\infty} \frac{(-1)^n}{n+1} B_{2n+1} \frac{1}{q^{2n}} \quad (\text{IV, 200}).$$
- $$22) \int \frac{x}{e^{2\pi x} - 1} \frac{dx}{(q^2 + x^2)^2} = -\frac{1}{8q^3} - \frac{1}{4q^3} + \frac{1}{4q} \frac{dZ'(q)}{dq} = \frac{1}{4q^3} \sum_{n=0}^{\infty} \frac{1}{q^{2n}} B_{2n+1} \quad (\text{IV, 200}).$$
- $$23) \int \frac{x}{e^{2\pi x} - 1} \frac{dx}{(q^2 - x^2)^2} = \frac{1}{4q^3} \sum_{n=0}^{\infty} (-1)^n \frac{1}{q^{2n}} B_{2n+1} \quad (\text{IV, 200}).$$

- $$1) \int e^{-x} dx \sqrt{x^b} = \frac{q}{b+q} \cdot \frac{2q}{b+2q} \cdot \frac{3q}{b+3q} \cdots \quad (\text{IV, 201}).$$
- $$2) \int e^{-qx} x^{a-\frac{1}{2}} dx = \frac{1^{a/2}}{(2q)^a} \sqrt{\frac{\pi}{q}} \quad (\text{VIII, 247}).$$
- $$3) \int e^{-\frac{1+x^2}{2q}} dx \sqrt{x} = \frac{1+q}{\sqrt{e}} \sqrt{2q\pi} \quad (\text{VIII, 287}).$$
- $$4) \int e^{-p^2 x - \frac{q^2}{x}} dx \sqrt{x} = \frac{1}{2p^2} (1 + 2pq) e^{-2pq} \sqrt{\pi} \quad (\text{VIII, 451}).$$
- $$5) \int e^{-(px + \frac{q}{x})} x^{a-\frac{1}{2}} dx = \left(\frac{q}{p}\right)^{\frac{1}{2}a} e^{-2\sqrt{pq}} \sqrt{\frac{\pi}{p}} \cdot \sum_{n=0}^{\infty} \frac{(a+1-n)^{2n/2}}{2^{n/2} (2\sqrt{pq})^n} \quad (\text{VIII, 483}).$$
- $$6) \int e^{-x^a} x^{(b+\frac{1}{2})a-1} dx = \frac{1^{b/2}}{2^{b/a}} \sqrt{\pi} \quad \text{V. T. 98, N. 2.}$$
- $$7) \int \frac{dx \sqrt{x}}{e^x + e^{-x}} = \frac{1}{2} \sqrt{\pi} \cdot \sum_{n=0}^{\infty} (-1)^n \frac{1}{\sqrt{2n+1}} \quad \text{V. T. 115, N. 33.}$$
- $$8) \int \frac{e^x - e^{-x}}{(e^x + e^{-x})^2} dx \sqrt{x} = \frac{1}{2} \sqrt{\pi} \cdot \sum_{n=0}^{\infty} (-1)^n \frac{1}{\sqrt{2n+1}} \quad \text{V. T. 98, N. 25.}$$

$$9) \int \frac{e^x - e^{-x}}{(e^x + e^{-x} + 1)^2} dx \sqrt{x} = \frac{1}{2} \operatorname{Cosec} \frac{\pi}{3} \cdot \sqrt{\pi} \cdot \sum_1^{\infty} (-1)^{n-1} \sin \frac{n\pi}{3} \cdot \sqrt{\frac{1}{n}} \text{ V. T. 98, N. 26.}$$

$$10) \int e^{-px} \frac{dx}{\sqrt{x}} = \sqrt{\frac{\pi}{p}} \text{ (VIII, 264).}$$

$$11) \int e^{px} \frac{dx}{\sqrt{x}} = e^{\frac{1}{2}\pi i} \sqrt{\frac{\pi}{p}} \text{ (IV, 202).}$$

$$12) \int e^{-\frac{1+x^2}{2qx}} \frac{dx}{\sqrt{x}} = \frac{\sqrt{2q\pi}}{\sqrt{e}} \text{ (VIII, 287) =}$$

$$13) \int e^{-\frac{1+x^2}{2qx}} \frac{dx}{x\sqrt{x}} \text{ (IV, 202).}$$

$$14) \int e^{-\frac{1+x^2}{2qx}} \frac{dx}{x^2\sqrt{x}} = \frac{1+q}{\sqrt{e}} \sqrt{2q\pi} \text{ (IV, 202). } 15) \int e^{-(p^2x+\frac{q^2}{x})} \frac{dx}{\sqrt{x}} = \frac{1}{p} e^{-\frac{1}{2}\pi i} \sqrt{\pi} \text{ (VIII, 428).}$$

$$16) \int e^{-(p^2x+\frac{q^2}{x})} \frac{dx}{x\sqrt{x}} = \frac{1}{q} e^{-\frac{1}{2}\pi i} \sqrt{\pi} \text{ (VIII, 428).}$$

$$17) \int e^{-(p^2x+\frac{q^2}{x})} \frac{dx}{x^{a+\frac{1}{2}}} = \left(\frac{p}{q}\right)^{\frac{1}{2}a} e^{-\frac{1}{2}\pi i} \sqrt{\frac{\pi}{p}} \cdot \sum_0^{\infty} \frac{(a-n)^{2n+1}}{2^{n/2} (2\sqrt{pq})^n} \text{ (VIII, 433).}$$

$$18) \int e^{-x} \sqrt{x}^b \frac{dx}{x} = \frac{q}{b} \frac{q}{b+q} \cdot \frac{2q}{b+2q} \frac{3q}{b+3q} \dots \text{ (IV, 202).}$$

$$19) \int e^{-\frac{1}{2}p\left(x+\frac{1}{x}\right)} \frac{\sqrt{1-x^2}}{1+x^2} x^{1/2} dx = \frac{2a+1}{(-1)^a} \sum_0^{a+1} \frac{(a+n)^{2n-1}}{1^{2n+1/2}} 2^{2n+1} \frac{d^{2n}}{dp^{2n}} \cdot \frac{e^{-p}}{p} \text{ (VIII, 432).}$$

$$20) \int (e^{p\sqrt{x}} + e^{-p\sqrt{x}}) e^{-r^2x} \frac{dx}{\sqrt{x}} = \frac{2}{r} \frac{p^2}{e^{1/2}r^2} \sqrt{\pi} \text{ (VIII, 570).}$$

$$21) \int (e^{-px} - e^{-qx}) \frac{dx}{x^{2-\frac{1}{a}}} = \frac{a}{a-1} \Gamma\left(\frac{1}{a}\right) \left(q^{\frac{a-1}{a}} - p^{\frac{a-1}{a}}\right) [q > p > 0] \text{ (IV, 202).}$$

$$22) \int (e^{q\sqrt{x}} - e^{-q\sqrt{x}})^2 e^{-p^2x} \frac{dx}{\sqrt{x}} = \frac{2\sqrt{\pi}}{r} \left(e^{\frac{q^2}{r^2}} - 1\right) \text{ (VIII, 570).}$$

$$23) \int \frac{\sin p \cdot \sqrt{\{\sqrt{p^2+x^2}+p\}} - \cos p \cdot \sqrt{\{\sqrt{p^2+x^2}-p\}}}{\sqrt{p^2+x^2}} e^{-x} dx = 0 \text{ (IV, 203).}$$

$$24) \int \frac{\sin p \cdot \sqrt{\{\sqrt{p^2+x^2}-p\}} + \cos p \cdot \sqrt{\{\sqrt{p^2+x^2}+p\}}}{\sqrt{p^2+x^2}} e^{-x} dx = 0 \text{ (IV, 203).}$$

$$25) \int \frac{1}{e^x + e^{-x}} \frac{dx}{\sqrt{x}} = \sqrt{\pi} \cdot \sum_0^{\infty} \frac{(-1)^n}{\sqrt{2n+1}} \text{ (VIII, 487).}$$

$$26) \int \frac{1}{e^x + e^{-x} + 1} \frac{dx}{\sqrt{x}} = \operatorname{Cosec} \frac{\pi}{3} \cdot \sqrt{\pi} \cdot \sum_1^{\infty} (-1)^{n-1} \sin \frac{n\pi}{3} \cdot \sqrt{\frac{1}{n}} \text{ (VIII, 487).}$$

F. Alg. irrat.;
Exponent.

TABLE 98, suite.

Lim. 0 et ∞ .

$$27) \int \frac{\cos \lambda - e^{-x} - \cos \{(a+1)\lambda\} \cdot e^{-ax} + \cos a\lambda \cdot e^{-(a+1)x}}{e^x + e^{-x} - 2 \cos \lambda} \frac{dx}{\sqrt{x}} = \sqrt{\pi} \cdot \sum_1^a \frac{\cos n\lambda}{\sqrt{n}} \quad \text{V. T. 133, N. 6.}$$

$$28) \int \frac{\sin \lambda - \sin \{(a+1)\lambda\} \cdot e^{-ax} + \sin a\lambda \cdot e^{-(a+1)x}}{e^x + e^{-x} - 2 \cos \lambda} \frac{dx}{\sqrt{x}} = \sqrt{\pi} \cdot \sum_1^a \frac{\sin n\lambda}{\sqrt{n}} \quad \text{V. T. 133, N. 5.}$$

F. Algébrique;
Exp. sous forme irrat.

TABLE 99.

Lim. 0 et ∞ .

$$1) \int e^{-x} x dx \sqrt{1 - e^{-x}} = \frac{4}{3} \left(\frac{4}{3} - \sqrt{2} \right) \quad \text{V. T. 117, N. 2.}$$

$$2) \int e^{-x} x dx \sqrt{1 - e^{-2x}} = \frac{1}{4} \pi \left(\frac{1}{2} + \sqrt{2} \right) \quad \text{V. T. 117, N. 1.}$$

$$3) \int e^{-x} x dx \sqrt{1 - e^{-2x^{2a-1}}} = \frac{1^{a/2} \pi}{2^{a+1} 1^{a/2}} \{ \Lambda + Z'(a+1) + 2\sqrt{2} \} \quad \text{V. T. 117, N. 3.}$$

$$4) \int \frac{x dx}{\sqrt{e^x - 1}} = 2\pi \sqrt{2} \quad \text{V. T. 118, N. 3.}$$

$$5) \int \frac{x^2 dx}{\sqrt{e^x - 1}} = 4\pi \left\{ (\sqrt{2})^2 + \frac{1}{12} \pi^2 \right\} \quad \text{V. T. 118, N. 13.}$$

$$6) \int \frac{x e^{-x} dx}{\sqrt{e^x - 1}} = \frac{1}{2} \pi (2\sqrt{2} - 1) \quad \text{V. T. 118, N. 5.}$$

$$7) \int \frac{x e^{-2x} dx}{\sqrt{e^x - 1}} = \frac{3}{4} \pi \left(\sqrt{2} - \frac{7}{12} \right) \quad \text{V. T. 118, N. 6.}$$

$$8) \int \frac{x e^{-x} dx}{\sqrt{e^{2x} - 1}} = 1 - \sqrt{2} \quad \text{V. T. 118, N. 4.}$$

$$9) \int \frac{x e^{-2ax} dx}{\sqrt{e^{2x} - 1}} = -\frac{2^{a-1/2}}{1^{a/2}} \left\{ \sqrt{2} + \sum_1^{2a-1} \frac{(-1)^n}{n} \right\} \quad \text{V. T. 118, N. 6.}$$

$$10) \int \frac{x e^{-(2a+1)x} dx}{\sqrt{e^{2x} - 1}} = \frac{3^{a-1/2}}{2^{a/2}} \frac{\pi}{2} \left\{ \sqrt{2} + \sum_1^{2a} \frac{(-1)^n}{n} \right\} \quad \text{V. T. 118, N. 5.}$$

$$11) \int \frac{x^2 e^x dx}{\sqrt{e^x - 1}} = 8\pi \sqrt{2} \quad \text{V. T. 99, N. 4.}$$

$$12) \int \frac{x^2 e^x dx}{\sqrt{e^x - 1}} = 24\pi \left\{ (\sqrt{2})^2 + \frac{1}{12} \pi^2 \right\} \quad \text{V. T. 99, N. 5.}$$

$$13) \int \frac{x dx}{\sqrt{e^{2x} - 1}} = \frac{\pi}{3\sqrt{3}} \left\{ \sqrt{2} + \frac{\pi}{3\sqrt{3}} \right\} \quad \text{V. T. 118, N. 7.}$$

F. Algébrique;

Exp. sous forme irrat.

TABLE 99, suite.

Lim. 0 et ∞ .

$$14) \int \frac{x dx}{\sqrt[3]{e^{3x}-1}} = \frac{\pi}{3\sqrt{3}} \left\{ 23 - \frac{\pi}{3\sqrt{3}} \right\} \text{ V. T. 118, N. 8.}$$

$$15) \int \frac{x^a e^{-bx} dx}{\sqrt[3]{1-e^{-bx}b^{-c}}} = 1^{a/1} \sum_0^{\infty} \frac{(b-c)^{n/b}}{b^{n/b^2}} \frac{1}{(q+bn)^{a+1}} \text{ V. T. 118, N. 14.}$$

$$16) \int \frac{x}{p^2 e^x + (q^2 - p^2)} \frac{e^x dx}{\sqrt{e^x - 1}} = \frac{2\pi}{pq} i \frac{p+q}{p} \text{ V. T. 138, N. 10.}$$

$$17) \int \frac{x}{p^2 e^x - (p^2 + q^2)} \frac{e^x dx}{\sqrt{e^x - 1}} = \frac{2\pi}{pq} \operatorname{Arctg} \frac{q}{p} \text{ V. T. 138, N. 11.}$$

$$18) \int \frac{\{q\sqrt{e^x-1}-ri\}^{-p} + \{q\sqrt{e^x-1}+ri\}^{-p}}{(e^x-1)^{\frac{3-p}{2}}} x e^{-x} dx = \frac{4}{r} \frac{\pi}{p-1} \{q^{1-p} - (q+r)^{1-p}\}$$

V. T. 141, N. 12.

F. Alg. rat. ent.;

Exponentielle.

TABLE 100.

Lim. — ∞ et ∞ .

$$1) \int e^{ix} (ix)^{p-1} dx = 2 \operatorname{Sin} p \pi \cdot \Gamma(p) [p < 1] \text{ (VIII, 288).}$$

$$2) \int e^{ix} (-ix)^{p-1} dx = 0 [p < 1] \text{ (VIII, 288)} = 3) \int e^{ix} (r-ix)^{p-1} dx [p \leq 1] \text{ (IV, 205).}$$

$$4) \int e^{ix} (r+ix)^{p-1} dx = \frac{2\pi e^{-r}}{\Gamma(1-p)} [p \leq 1] \text{ (IV, 205).}$$

$$5) \int e^{ix} (ix)^{p-1} (-ix)^{q-1} dx = 2 \operatorname{Sin} p \pi \cdot \Gamma(p+q-1) [p < 1, q \leq 1] \text{ (VIII, 288).}$$

$$6) \int e^{-x^2+2px} x^2 dx = \frac{1}{2} (1+2p^2) e^{p^2} \sqrt{\pi} \text{ (IV, 205).}$$

$$7) \int e^{-px^2+2qx} x dx = \frac{q}{p} \sqrt{\frac{\pi}{p}} \cdot e^{\frac{q^2}{p}} \text{ (IV, 205).}$$

$$8) \int e^{-px^2+2qx} x^{a+1} dx = \frac{1}{2^a p} \sqrt{\frac{\pi}{p}} \cdot \frac{d^a}{dq^a} \cdot q e^{\frac{q^2}{p}} \text{ (IV, 205).}$$

$$9) \int e^{-px^2+2qx} x^a dx = (-1)^a \left(\frac{q}{2p}\right)^a e^{\frac{q^2}{p}} \cdot \sqrt{\frac{\pi}{p}} \cdot \sum_0^{\infty} \frac{a^{2n-1}}{1^{n/1}} \left(\frac{p}{q^2}\right)^n \text{ (IV, 205).}$$

$$10) \int e^{(px^2+qx)} x^a dx = (-1)^a (1+i) \left(\frac{q}{2p}\right)^a e^{-\frac{q^2}{4p}} \sqrt{\frac{\pi}{2p}} \cdot \sum_0^{\infty} \frac{a^{2n-1}}{1^{n/1}} \left(\frac{pi}{q^2}\right)^n \text{ (IV, 205).}$$

F. Alg. rat. ent.;
Exponentielle.

TABLE 100, suite.

Lim. — ∞ et ∞ .

$$11) \int e^{-(p x^2 + q x)} x^a dx = (-1)^a (1-i) \left(\frac{q}{2p}\right)^a e^{\frac{q^2 i}{4p}} \sqrt{\frac{\pi}{2p}} \cdot \sum_0^{\infty} \frac{a^{2n+1}}{1^{2n+1}} \left(\frac{p}{q^2 i}\right)^n \quad (\text{IV, 205}).$$

$$12) \int e^{-x^2} (x - p i)^{2a} dx = \frac{1^{a/2}}{2^a} \sqrt{\pi} \cdot \sum_0^{\infty} (-1)^n \frac{a^{2n+1}}{1^{2n+1}} (2p)^{2n} \quad \text{Laplace, Probab.}$$

$$13) \int e^{-q e^x} x e^x dx = -\frac{1}{q} (A + lq) \quad \text{V. T. 256, N. 2.}$$

$$14) \int e^{-q e^{1/x}} x e^x dx = -\frac{1}{4} \{A + l(4q)\} \sqrt{\frac{\pi}{q}} \quad \text{V. T. 256, N. 8.}$$

F. Alg. rat. ent. x ;
Exp. polynôme en dén.

TABLE 101.

Lim. — ∞ et ∞ .

$$1) \int \frac{x dx}{p^2 e^x + q^2 e^{-x}} = \frac{\pi}{2pq} l \frac{q}{p} \quad \text{V. T. 135, N. 5.}$$

$$2) \int \frac{x dx}{p^2 e^x - q^2 e^{-x}} = \frac{p}{4q} \pi^2 \quad \text{V. T. 135, N. 6.}$$

$$3) \int \frac{e^{(p-1)x} x dx}{e^{rx} - 1} = \left\{ \frac{\pi}{r} \operatorname{Cosec} \left(\frac{p+1}{r} \pi \right) \right\}^2 [p^2 < 1] \quad \text{V. T. 135, N. 8.}$$

$$4) \int \frac{1 - e^{px}}{e^x - e^{-x}} x dx = -\left(\frac{\pi}{2} \operatorname{Tang} \frac{1}{2} p \pi \right)^2 [p < 1] \quad \text{V. T. 140, N. 3.}$$

$$5) \int e^{px} \frac{x dx}{e^x + q} = \pi q^{p-1} \operatorname{Cosec} p \pi \cdot (lq - \pi \operatorname{Cot} p \pi) [p < 1] \quad \text{V. T. 135, N. 1.}$$

$$6) \int \frac{x}{e^x - 1} \frac{dx}{e^{(p-1)x}} = (\pi \operatorname{Cosec} p \pi)^2 [p < 1] \quad \text{V. T. 140, N. 1.}$$

$$7) \int \frac{1 - e^{-x}}{1 - e^{-1/q x}} e^{(1-q)x} x dx = \left(\frac{\pi}{2q} \operatorname{Tg} \frac{\pi}{2q} \right)^2 [q > 1] \quad \text{V. T. 135, N. 10.}$$

$$8) \int \frac{1 - e^{-1/x}}{1 - e^{-1/q x}} e^{(1-q)x} x dx = \left(\frac{\pi}{2q} \operatorname{Tg} \frac{\pi}{q} \right)^2 [q > 2] \quad \text{V. T. 135, N. 11.}$$

$$9) \int \frac{1 - e^{-1/x}}{1 - e^{-1/b x}} e^{-ax} x dx = \left(\frac{\pi}{2b} \right)^2 \operatorname{Cosec}^2 \frac{a\pi}{2b} \cdot \operatorname{Cosec}^2 \left(\frac{a+2}{2b} \pi \right) \cdot \operatorname{Sin} \left(\frac{a+1}{b} \pi \right) \cdot \operatorname{Sin} \frac{\pi}{b} \quad \text{V. T. 135, N. 12.}$$

$$10) \int \frac{x e^x dx}{(q + e^x)^2} = \frac{1}{q} lq [q < 1] \quad \text{V. T. 139, N. 1.}$$

$$11) \int \frac{x e^x dx}{(q + e^x)^{p+1}} = \frac{1}{p q^p} \{lq - A - Z'(p)\} = \frac{1}{p q^p} \left\{ lq - \sum_1^{p-1} \frac{1}{n} \right\} [p \text{ entier}] \quad \text{V. T. 139, N. 2.}$$

F. Alg. rat. ent. x ;

Exp. polynôme en dén.

TABLE 101, suite.

Lim. — ∞ et ∞ .

$$12) \int \frac{x e^x dx}{(q + e^x)^{b+\frac{1}{2}}} = \frac{2}{(2b+1)q^{\frac{1}{2}+b}} \left\{ l(4q) - \sum_1^{b-1} \frac{1}{n} - 2^b \sum_b^{b-1} \frac{1}{n} \right\} \text{ V. T. 142, N. 5.}$$

$$13) \int \frac{x e^x dx}{(q^2 + r^2 e^{2x})^p} = \frac{\Gamma(p-\frac{1}{2}) \sqrt{\pi}}{4 q^{2p-1} r \Gamma(p)} \left\{ 2 l \frac{q}{2r} - A - Z' \left(p - \frac{1}{2} \right) \right\} \text{ V. T. 139, N. 3.}$$

$$14) \int \frac{x dx}{(q^2 e^x + e^{-x})^p} = \frac{-1}{2 q^p} l q \frac{(\Gamma(\frac{1}{2}p))^2}{\Gamma(p)} \text{ V. T. 140, N. 6.}$$

$$15) \int \frac{x e^{-x} dx}{(q + e^{-x})^{a+1}} = \frac{1}{(1+a)q^{a+1}} \left\{ -lq + \sum_1^a \frac{1}{n} \right\} \text{ V. T. 139, N. 2.}$$

$$16) \int \frac{x}{e^x + q} \frac{dx}{e^{-x} + 1} = \frac{1}{2(q-1)} (lq)^2 \text{ V. T. 140, N. 8.}$$

$$17) \int \frac{x}{q e^{-x} + 1} \frac{dx}{e^x - 1} = \frac{1}{2(q+1)} \{ \pi^2 + (lq)^2 \} \text{ V. T. 140, N. 10.}$$

$$18) \int \frac{e^{(p-1)x}}{e^x + q} \frac{x dx}{e^x + 1} = \frac{\pi}{q-1} \text{Cosec}^2 p\pi \cdot \{ q^p \text{Sin} p\pi \cdot lq + (1-q^p) \pi \text{Cos} p\pi \} [p^2 < 1] \text{ V. T. 140, N. 9.}$$

$$19) \int \frac{e^{px}}{q e^{-x} + 1} \frac{x dx}{e^x - 1} = \frac{\pi}{1+q} \text{Cosec}^2 p\pi \cdot \{ \pi + q^p (\text{Sin} p\pi \cdot lq - \pi \text{Cos} p\pi) \} [p^2 < 1] \text{ V. T. 140, N. 11.}$$

F. Alg. rat. ent. x^2 ;

Exp. polynôme en dén.

TABLE 102.

Lim. — ∞ et ∞ .

$$1) \int \frac{p^2 e^x - q^2 e^{-x}}{(p^2 e^x + q^2 e^{-x})^2} x^2 dx = \frac{\pi}{pq} l \frac{q}{p} \text{ V. T. 101, N. 1.}$$

$$2) \int \left(\frac{x}{e^x - e^{-x}} \right)^2 dx = \frac{1}{12} \pi^2 \text{ V. T. 139, N. 4.}$$

$$3) \int \frac{p^2 e^x + q^2 e^{-x}}{(p^2 e^x - q^2 e^{-x})^2} x^2 dx = \frac{p}{2q} \pi^2 \text{ V. T. 101, N. 2.}$$

$$4) \int \frac{p + (1-p)e^{-x}}{(1-e^{-x})^2} e^{-px} x^2 dx = 2\pi^2 \text{Cosec}^2 p\pi [p < 1] \text{ V. T. 101, N. 6.}$$

$$5) \int \frac{q^2 e^x - e^{-x}}{(q^2 e^x + e^{-x})^{p+1}} x^2 dx = \frac{-1}{q^p} l q \frac{(\Gamma(\frac{1}{2}p))^2}{\Gamma(p+1)} \text{ V. T. 101, N. 14.}$$

$$6) \int \frac{x^2}{e^x - 1} \frac{dx}{1 + q e^{-x}} = \frac{1}{3(1+q)} \{ \pi^2 + (lq)^2 \} lq \text{ V. T. 141, N. 1.}$$

$$7) \int \frac{x - lq}{e^x - 1} \frac{x dx}{1 - q e^{-x}} = \frac{1}{6(q-1)} \{ 4\pi^2 + (lq)^2 \} lq \text{ V. T. 141, N. 5.}$$

F. Alg. rat. ent. x^n ;
Exp. polynôme en dén.

TABLE 102, suite.

Lim. — ∞ et ∞ .

- 8) $\int \frac{x-lq}{e^x-1} \frac{x e^{px} dx}{1-q e^{-x}} = \frac{1}{q-1} \pi^2 \operatorname{Cosec}^2 p\pi \cdot \{(q^p+1)lp-2\pi \cot p\pi \cdot (q^p-1)\} [q^2 < 1]$
V. T. 141, N. 6.
- 9) $\int \frac{x^2}{e^x-1} \frac{dx}{1+q e^{-x}} = \frac{1}{4(1+q)} \{\pi^2 + (lq)^2\}^2$ V. T. 141, N. 2.
- 10) $\int \frac{x^4}{e^x-1} \frac{dx}{1+q e^{-x}} = \frac{1}{15(1+q)} \{\pi^2 + (lq)^2\}^2 \{7\pi^2 + 3(lq)^2\} lq$ V. T. 141, N. 3.
- 11) $\int \frac{x^6}{e^x-1} \frac{dx}{1+q e^{-x}} = \frac{1}{6(1+q)} \{\pi^2 + (lq)^2\}^2 \{3\pi^2 + (lq)^2\}^2$ V. T. 141, N. 4.
- 12) $\int \frac{e^x - q e^{-x}}{(e^x + q)^2} \frac{x^2 dx}{(1+e^{-x})^2} = \frac{1}{q-1} (lq)^2$ V. T. 101, N. 16.
- 13) $\int \frac{e^x + q e^{-x}}{(q e^{-x} + 1)^2} \frac{x^2 dx}{(1-e^{-x})^2} = \frac{1}{q+1} \{\pi^2 + (lq)^2\}$ V. T. 101, N. 17.
- 14) $\int \frac{x^{2n+1} dx}{e^{px} + e^{-px}} = 0$ (VIII, 285*). 15) $\int \frac{x^{2n} dx}{e^{px} + e^{-px}} = \frac{2}{p^{2n+1}} \cdot 1^{2n+1} \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^{2n+1}}$ (VIII, 285*).
- 16) $\int \frac{e^x - e^{-x}}{(e^x + e^{-x})^2} x^{2n} dx = 0$ V. T. 102, N. 14.

F. Alg. rat. fract.;
Exponentielle.

TABLE 103.

Lim. — ∞ et ∞ .

- 1) $\int e^{(px^2 + \frac{q}{x})} \frac{dx}{x^{2n}} = \left(\frac{p}{q}\right)^{\frac{1}{2n}} e^{2i\sqrt{pq}} (1+i) \sqrt{\frac{\pi}{2p}} \cdot \sum_{n=0}^{\infty} \frac{(a+n-1)^{2n-1}}{1^{n/1}} \left(\frac{i}{4\sqrt{pq}}\right)^n$ (IV, 210).
- 2) $\int e^{-(px^2 + \frac{q}{x})} \frac{dx}{x^{2n}} = \left(\frac{p}{q}\right)^{\frac{1}{2n}} e^{-2i\sqrt{pq}} (1-i) \sqrt{\frac{\pi}{2p}} \cdot \sum_{n=0}^{\infty} \frac{(a+n-1)^{2n-1}}{1^{n/1}} \left(\frac{1}{4i\sqrt{pq}}\right)^n$ (IV, 210).
- 3) $\int \frac{e^{px} - e^{qx}}{1+e^{rx}} \frac{dx}{x} = l \left(Tg \frac{p\pi}{2r} \cdot \cot \frac{q\pi}{2r} \right)$ V. T. 143, N. 2.
- 4) $\int \frac{e^{px} - e^{qx}}{1-e^{rx}} \frac{dx}{x} = l \left(\sin \frac{p\pi}{r} \cdot \operatorname{Cosec} \frac{q\pi}{r} \right)$ V. T. 143, N. 4.
- 5) $\int \frac{e^{xi} dx}{q+xi} = 2\pi e^{-q}$ (IV, 211).
- 6) $\int \frac{(-xi)^p}{q+xi} e^{xi} dx = 2\pi q^p e^{-q}$ (IV, 211).
- 7) $\int \frac{(xi)^p}{q+xi} e^{-xi} dx = 0$ (IV, 211).
- 8) $\int \frac{e^{-pxi} dx}{q^2 + x^2} = \frac{\pi}{q} e^{-pq}$ (VIII, 444) =
- 9) $\int \frac{e^{pxi} dx}{q^2 + x^2}$ (VIII, 444*).

$$10) \int \frac{e^{(p-r)x} dx}{q^2 + x^2} = \frac{\pi}{q} e^{(p-r)q} [p < r < \infty] = \frac{\pi}{q} e^{(r-p)q} [0 < r < p] \text{ (IV, 211).}$$

$$11) \int \frac{(-xi)^p}{q^2 + x^2} e^{rx} dx = \pi q^{p-1} e^{-qr} =$$

$$12) \int \frac{(xi)^p}{q^2 + x^2} e^{-rx} dx \text{ (IV, 212).}$$

$$13) \int \frac{(xi)^{p+1}}{q^2 - x^2} e^{-rx} dx = \pi q^p \cos \left\{ \frac{p+2}{2} \pi - qr \right\} \text{ (IV, 212).}$$

$$14) \int \frac{e^{px}}{(q+xi)^r} dx = \frac{2\pi}{\Gamma(r)} p^{r-1} e^{-pq} \text{ (IV, 211).}$$

$$15) \int \frac{e^{-px}}{(q+xi)^r} dx = 0 =$$

$$16) \int \frac{e^{px}}{(q-xi)^r} dx \text{ (IV, 211).}$$

$$\left. \begin{aligned} 17) \int \frac{e^{-px}}{1+x^2} \frac{dx}{(xi)^{1-q}} &= (-1)^{q-1} \pi e^p \\ 18) \int \frac{e^{-px}}{1-x^2} \frac{dx}{(xi)^{1-q}} &= -\frac{1}{2} \pi \cos \left(\frac{1}{2} q \pi - p \right) \end{aligned} \right\} [q < 1] \text{ (IV, 210).}$$

$$19) \int \frac{e^{-px}}{q^2 + x^2} \frac{dx}{x^r} = \frac{\pi}{q^{r+1}} e^{-pq + \frac{1}{2} r \pi i} \text{ (IV, 210).}$$

$$20) \int \frac{e^{-px}}{(s+xi)^r} \frac{dx}{q^2 + x^2} = \frac{\pi}{q} \frac{e^{-ps}}{(q+s)^r} \text{ (VIII, 609).}$$

$$21) \int \frac{e^{-px}}{(s+xi)^t (s_1+xi)^{t_1} \dots} \frac{dx}{q^2 + r^2 x^2} = \frac{\pi}{q} e^{-\frac{ps}{r}} (q+sr)^{-t} (q+s_1 r)^{-t_1} \dots \text{ (VIII, 609*)}.}$$

$$22) \int \frac{e^{x^2} dx}{\sqrt{q+xi}} = 2 e^{-q} \sqrt{\pi} \text{ (IV, 212).}$$

$$23) \int e^{q+x+\frac{p}{q+xi}} \frac{dx}{\sqrt{q+xi}} = (e^{\sqrt{p}} + e^{-\sqrt{p}}) \sqrt{\pi} \text{ (IV, 212).}$$

$$1) \int_0^{2\pi} e^{ax} x dx = -\frac{2\pi i}{a} \text{ (VIII, 363).}$$

$$2) \int_0^{2\pi} e^{qx} x dx = \frac{1}{q^2} \{ (1 - 2q\pi i) e^{2\pi i} - 1 \} \text{ (VIII, 362).}$$

$$3) \int_0^{2\pi} \frac{e^{-ax}}{1-pe^{x^2}} x dx = p^a \left\{ 2\pi^2 + 2\pi i l(1-p) + 2\pi i \sum_1^a \frac{1}{p^n} \right\} \text{ (VIII, 484).}$$

$$4) \int_0^{1/2} (e^x - 1)^{q-1} x e^x dx = \frac{1}{q} \left\{ \ln 2 + \sum_{n=0}^{\infty} \frac{(-1)^{n-1}}{q+n+1} \right\} \text{ V. T. 106, N. 4.}$$

$$5) \int_0^{1/2} \frac{x dx}{1 - e^{-x}} = \frac{1}{12} \pi^2 \text{ V. T. 114, N. 1.}$$

$$6) \int_0^{1/2} \frac{e^x x^2 dx}{(e^x - 1)^2} = \frac{1}{6} \pi^2 - 2 (\ln 2)^2 \text{ V. T. 104, N. 5.}$$

$$7) \int_0^{1/2} \frac{x dx}{e^x + 2e^{-x} - 2} = \frac{1}{8} \pi \ln 2 \text{ V. T. 114, N. 3.}$$

$$8) \int_0^{1/2} \frac{e^x - 2e^{-x}}{(e^x + 2e^{-x} - 2)^2} x^2 dx = \frac{\pi}{4} \ln 2 - (\ln 2)^2 \text{ V. T. 104, N. 7.}$$

$$9) \int_0^{\frac{1+p}{1-p}} \frac{1 - e^{-x}}{(p^2 - q^2)(1 + e^{2x}) + 2(p^2 + q^2)e^x} \frac{x e^x dx}{\sqrt{(p^2 - 1)(e^{2x} + 1) + 2(p^2 + 1)e^x}} = \frac{\pi}{2pq\sqrt{1 - q^2}} \\ \frac{pq - \{1 - \sqrt{1 - q^2}\} \{1 - \sqrt{1 - p^2}\}}{pq + \{1 - \sqrt{1 - q^2}\} \{1 - \sqrt{1 - p^2}\}} \text{ V. T. 122, N. 8.}$$

$$10) \int_1^{\infty} e^{-px} \frac{dx}{x} = -Ei(-p) \text{ (IV, 214).}$$

$$11) \int_1^{\infty} e^{-\frac{x}{p}} \frac{dx}{\sqrt{x-1}} = \frac{\sqrt{p}\pi}{\sqrt{e}} \text{ (IV, 214).}$$

$$12) \int_1^{\infty} e^{-px} \frac{dx}{x^a} = \frac{(-p)^{a-1}}{1^{a-1/1}} \left\{ A + \ln p - \sum_{n=1}^{a-1} \frac{1}{n} \right\} - \sum_{n=1}^{a-1} \frac{1}{1^{n-1/1}} \frac{(-p)^{n-1}}{a-n} + \sum_{n=1}^{\infty} \frac{(-p)^{a+n-1}}{n \cdot 1^{a+n/1}} \text{ (IV, 214*)}.}$$

$$13) \int_1^{\infty} \frac{1}{e^{px} + e^{-px}} \frac{dx}{x} = \frac{1}{\pi} \sum_{n=0}^{\infty} \frac{(-1)^n}{2n+1} \ln \left\{ 1 + \left(\frac{2n+1}{2p} \pi \right)^2 \right\} \text{ (IV, 214*)}.}$$

$$14) \int_1^{\infty} \frac{1}{e^{px} - e^{-px}} \frac{dx}{x} = \frac{1}{2p} + \frac{1}{\pi} \sum_{n=1}^{\infty} \frac{(-1)^n}{n} \operatorname{Arctg} \frac{n\pi}{p} \text{ (IV, 214*)}.}$$

$$15) \int_1^{\infty} \frac{e^{kpx}}{e^{px} - e^{-px}} \frac{dx}{x} = \frac{1}{2p} + \frac{1}{\pi} \sum_{n=1}^{\infty} \frac{(-1)^n}{n} \operatorname{Arctg} \frac{2n\pi}{p} + \frac{1}{2\pi} \sum_{n=0}^{\infty} \frac{(-1)^n}{2n+1} \ln \left\{ 1 + \left(\frac{2n+1}{p} \pi \right)^2 \right\} \\ \text{ (IV, 214*)}.}$$

$$16) \int_{-1}^{\infty} \frac{e^{-qx} dx}{\sqrt{1+x}} = e^q \sqrt{\frac{\pi}{q}} \text{ (IV, 215*)}.}$$

$$1) \int_0^{\infty} x^k e^{-x} dx = e^{-k} k^k \sqrt{2k\pi} \text{ (IV, 170). } 2) \int_0^{\infty} \frac{e^{px} - e^{-px}}{e^{qx} - e^{-qx}} e^{-kx} \frac{dx}{x} = 0 [s < 1] \text{ (VIII, 318).}$$

$$3) \int_0^{\infty} \frac{e^{-kx}}{e^x + e^{-x}} \frac{dx}{\sqrt{x}} = 0 =$$

$$4) \int_0^{\infty} \frac{e^{-kx}}{e^x + e^{-x} + 1} \frac{dx}{\sqrt{x}} \text{ (VIII, 317).}$$

$$5) \int_0^1 \frac{x^{p-1} e^{-qx} dx}{k^{-1} + (b-x)^2} = \frac{\pi k}{2\Gamma(p)} b^{p-1} e^{-bk} \text{ (IV, 212*)}.$$

$$6) \int_0^1 (e^{-kqx} - e^{-krx}) \frac{dx}{x} = l \frac{r}{q} \text{ (VIII, 380).}$$

$$7) \int_1^e e^{\pm \frac{x}{k}} \frac{dx}{x} = lq \text{ (VIII, 319).}$$

$$8) \int_a^b \left(e^{-\frac{2x}{k}} - e^{-\frac{x}{k}} \right) \frac{dx}{x} = 2l \frac{q}{p} [ab < 0], = 0 [ab > 0] \text{ (VIII, 388).}$$

$$1) \int l(1+x) \cdot x dx = \frac{1}{4}$$

$$2) \int l(1+x) \cdot x^{2a} dx = \frac{2}{2a+1} l2 + \frac{1}{2a+1} \sum_1^{2a+1} \frac{(-1)^n}{n}$$

$$3) \int l(1+x) \cdot x^{2a-1} dx = \frac{1}{2a} \sum_1^{2a} \frac{(-1)^{n-1}}{n}$$

Sur 1) à 3) voyez Oettinger, Gr. 39, 121.

$$4) \int l(1+x) \cdot x^{q-1} dx = \frac{1}{q} \left\{ l2 + \sum_0^{\infty} \frac{(-1)^{n-1}}{q+n+1} \right\} \text{ (VIII, 592).}$$

$$5) \int l(1+x) \cdot (1+x)^{q-1} dx = \frac{1}{q} 2^q l2 - \frac{1}{q^2} (2^q - 1) \text{ Oettinger, Gr. 39, 121.}$$

$$6) \int l(1-x) \cdot x dx = -\frac{3}{4} \text{ (IV, 216).}$$

$$7) \int l(1-x) \cdot x^{a-1} dx = -\frac{1}{a} \sum_1^a \frac{1}{n}$$

$$8) \int l(1-x) \cdot (1-x)^{q-1} dx = -\frac{1}{q^2}$$

$$9) \int l(1+x^2) \cdot x^{2a} dx = \frac{1}{2a+1} \left\{ l2 + (-1)^a \frac{\pi}{2} + 2(-1)^{a-1} \sum_0^{2a} \frac{(-1)^n}{2n+1} \right\}$$

$$10) \int l(1+x^2) \cdot x^{2a+1} dx = \frac{1}{2a+1} \left\{ l2 - \frac{1}{2} \sum_0^{2a} \frac{(-1)^n}{n+1} \right\}$$

$$11) \int l(1+x^2) \cdot x^{2a-1} dx = \frac{1}{4a} \sum_0^{2a} \frac{(-1)^n}{n+1}$$

Sur 7) à 11) voyez Oettinger, Gr. 39, 121.

$$12) \int l(1+x^2) \cdot x^{p-1} dx = \frac{1}{p} \left\{ l2 - 2 \sum_0^{\infty} \frac{(-1)^n}{p+2n+2} \right\} \text{ (VIII, 592).}$$

$$13) \int l(1-x^2) \cdot x^{2a-1} dx = -\frac{1}{2a} \sum_1^a \frac{1}{n}$$

$$14) \int l(1-x^2) \cdot x^{2a} dx = \frac{2}{2a+1} \left\{ l2 - \sum_1^a \frac{1}{2n+1} \right\}$$

Sur 13) et 14) voyez Oettinger, Gr. 39, 121.

$$15) \int l(1-x^2) \cdot \{px^{p-1} - qx^{q-1}\} dx = Z' \left\{ \left(\frac{1}{2}p + 1 \right) - Z' \left(\frac{1}{2}q + 1 \right) \right\} \text{ V. T. 2, N. 9.}$$

$$16) \int l(1+x^2) \cdot x^{2a} dx = \frac{1}{6a+1} \left\{ 2l2 + \frac{\pi}{\sqrt{3}} - 3 \sum_{n=0}^{2a} \frac{(-1)^n}{3n+1} \right\}$$

$$17) \int l(1+x^2) \cdot x^{2a+1} dx = \frac{1}{6a+2} \left\{ \frac{\pi}{\sqrt{3}} - 3 \sum_{n=0}^{2a} \frac{(-1)^n}{3n+2} \right\}$$

$$18) \int l(1+x^2) \cdot x^{2a+2} dx = \frac{1}{6a+3} \left\{ 2l2 + \sum_{n=1}^{2a+1} \frac{(-1)^n}{n} \right\}$$

$$19) \int l(1+x^2) \cdot x^{2a+3} dx = \frac{1}{6a+4} \left\{ -\frac{\pi}{\sqrt{3}} + 3 \sum_{n=0}^{2a+1} \frac{(-1)^n}{3n+1} \right\}$$

$$20) \int l(1+x^2) \cdot x^{2a+4} dx = \frac{1}{6a+5} \left\{ 2l2 - \frac{\pi}{\sqrt{3}} + 3 \sum_{n=0}^{2a+1} \frac{(-1)^n}{3n+2} \right\}$$

$$21) \int l(1+x^2) \cdot x^{2a+5} dx = \frac{1}{6a+6} \sum_{n=1}^{2a+2} \frac{(-1)^{n-1}}{n}$$

$$22) \int l(1-x^2) \cdot x^{2a} dx = \frac{1}{6a+2} \left\{ l3 + \frac{\pi}{\sqrt{3}} - 6 \sum_{n=0}^a \frac{1}{3n+1} \right\}$$

$$23) \int l(1-x^2) \cdot x^{2a+1} dx = \frac{1}{6a+4} \left\{ l3 - \frac{\pi}{\sqrt{3}} - 6 \sum_{n=0}^a \frac{1}{3n+2} \right\}$$

$$24) \int l(1-x^2) \cdot x^{2a+2} dx = -\frac{1}{3a+3} \sum_{n=1}^{a+1} \frac{1}{n}$$

$$25) \int l(1+x^4) \cdot x^{4a} dx = \frac{1}{4a+1} \left\{ l2 + \frac{(-1)^a}{\sqrt{2}} \left(\pi + l \frac{2+\sqrt{2}}{2-\sqrt{2}} \right) + (-1)^a + \sum_{n=0}^a \frac{(-1)^n}{4n+1} \right\}$$

$$26) \int l(1+x^4) \cdot x^{4a+1} dx = \frac{1}{4a+2} \left\{ l2 + \frac{1}{2} (-1)^a \pi + 2(-1)^{a-1} \sum_{n=0}^a \frac{(-1)^n}{2n+1} \right\}$$

$$27) \int l(1+x^4) \cdot x^{4a+2} dx = \frac{1}{4a+3} \left\{ l2 + \frac{(-1)^a}{\sqrt{2}} \left(\pi + l \frac{2-\sqrt{2}}{2+\sqrt{2}} \right) + (-1)^a + 4 \sum_{n=0}^a \frac{(-1)^n}{4n+3} \right\}$$

$$28) \int l(1+x^4) \cdot x^{4a+3} dx = \frac{1}{4a+4} \left\{ l2 + \frac{1}{2} \sum_{n=1}^{2a+1} \frac{(-1)^n}{n} \right\}$$

$$29) \int l(1+x^4) \cdot x^{4a-1} dx = \frac{1}{8a} \sum_{n=1}^{2a} \frac{(-1)^{n-1}}{n}$$

$$30) \int l(1-x^4) \cdot x^{4a} dx = \frac{1}{4a+1} \left\{ 3l2 + \frac{1}{2} \pi - 4 \sum_{n=0}^a \frac{1}{4n+1} \right\}$$

F. Alg. rat. ent.;

Log. en num. $l(1 \pm x^a)$.

TABLE 106, suite.

Lim. 0 et 1.

$$31) \int l(1-x^a) \cdot x^{a+1} dx = \frac{1}{2a+1} \left\{ l2 - \sum_0^a \frac{1}{2n+1} \right\}$$

$$32) \int l(1-x^a) \cdot x^{a+1} dx = \frac{1}{4a+3} \left\{ 3l2 - \frac{1}{2}\pi - 4 \sum_0^a \frac{1}{4n+3} \right\}$$

$$33) \int l(1-x^a) \cdot x^{a+1} dx = \frac{-1}{4a+4} \sum_1^{a+1} \frac{1}{n}$$

$$34) \int \{l(1+x^q)\}^a \cdot (1+x^q)^r x^{q-1} dx = (-1)^{a-1} \frac{1^{a/1}}{q(r+1)^{a+1}} + \frac{2^{r+1}}{q} \sum_0^a (-1)^n (l2)^{a-n} \frac{1^{n/1}}{(r+1)^{n+1}}$$

$$35) \int \{l(1-x^q)\}^a \cdot (1-x^q)^r x^{q-1} dx = (-1)^a \frac{1^{a/1}}{q(r+1)^{a+1}}$$

Sur 16) à 35) voyez Oettinger, Gr. 39, 121.

F. Alg. rat. ent.;

Log. en num. d'autre forme.

TABLE 107.

Lim. 0 et 1.

$$1) \int l \frac{1}{x} \cdot x^p dx = \frac{1}{(p+1)^2} \text{ (VIII, 576). } 2) \int \left(l \frac{1}{x}\right)^{a-1} \cdot x^{p-1} dx = \frac{1^{a/1}}{(2p)^a} \sqrt{\frac{\pi}{p}} \text{ V. T. 98, N. 2.}$$

$$3) \int \left(l \frac{1}{x}\right)^{q-1} \cdot x^{p-1} dx = \frac{1}{p^q} \Gamma(q) \text{ (VIII, 554).}$$

$$4) \int \left(l \frac{1}{x}\right)^{p-1} \cdot x^{q+r-1} dx = \frac{\Gamma(p)}{(q+r)^p} \text{ V. T. 81, N. 3.}$$

$$5) \int l \frac{1}{x} \cdot (1-x)^{q-1} x^{p-1} dx = \frac{\Gamma(p)\Gamma(q)}{\Gamma(p+q)} \{Z'(p+q) - Z'(p)\} = \frac{\Gamma(p)\Gamma(q)}{\Gamma(p+q)} \sum_0^q \frac{1}{n+p-1} [q \text{ entier}]$$

(IV, 215).

$$6) \int (lx)^b \cdot (1+x^q)^a x^{p-1} dx = (-1)^b 1^{b/1} \sum_0^a \binom{a}{n} \frac{1}{(p+nq)^{b+1}} \text{ Oettinger, Gr. 39, 241.}$$

$$7) \int (lx)^b \cdot (1-x^q)^a x^{p-1} dx = (-1)^b 1^{b/1} \sum_0^a \binom{a}{n} \frac{(-1)^n}{(p+nq)^{b+1}} \text{ (IV, 215).}$$

$$8) \int \left\{ \left(l \frac{1}{x}\right)^{q-1} - x^{p-1} (1-x)^{q-1} \right\} dx = \frac{\Gamma(1+q)}{q\Gamma(p+q)} \{\Gamma(p+q) - \Gamma(p)\} \text{ V. T. 81, N. 14.}$$

$$9) \int l \left(s + \frac{1}{x}\right) \cdot x^{a-1} dx = \frac{1}{a} \left\{ \frac{1}{2a} + l2 - \sum_0^\infty \frac{(-1)^n}{2a+n+1} \right\} \text{ (VIII, 422).}$$

$$10) \int l(1+x+x^2) \cdot x^{a-1} dx = \frac{1}{3a+1} \left\{ \frac{3}{2} l3 + \frac{\pi}{2\sqrt{3}} - 2 + \sum_1^a \frac{9n-1}{(3n-1)3n(3n+1)} \right\}$$

F. Alg. rat. ent.;

Log. en num. d'autre forme.

TABLE 107, suite.

Lim. 0 et 1.

$$\begin{aligned}
 11) \int l(1+x+x^2) \cdot x^{3a+1} dx &= \frac{1}{3a+2} \left\{ \frac{3}{2} l3 - \frac{\pi}{2\sqrt{3}} + \sum_1^a \frac{9n+2}{3n(3n+1)(3n+2)} \right\} \\
 12) \int l(1+x+x^2) \cdot x^{3a-1} dx &= \frac{1}{3a} \sum_0^{a-1} \frac{9n+5}{(3n+1)(3n+2)(3n+3)} \\
 13) \int l(1-x+x^2) \cdot x^{3a} dx &= \frac{(-1)^a}{3a+1} \left\{ \frac{\pi}{\sqrt{3}} - 2 + \sum_1^a \frac{(-1)^n(9n+1)}{(3n-1)3n(3n+1)} \right\} \\
 14) \int l(1-x+x^2) \cdot x^{3a+1} dx &= \frac{(-1)^a}{3a+2} \left\{ \frac{\pi}{\sqrt{3}} - 2 + \sum_1^a \frac{(-1)^n(9n+4)}{3n(3n+1)(3n+2)} \right\} \\
 15) \int l(1-x+x^2) \cdot x^{3a-1} dx &= \frac{(-1)^{a-1}}{3a} \sum_0^{a-1} \frac{(-1)^n(9n+7)}{(3n+1)(3n+2)(3n+3)} \\
 16) \int l(1+x^2+x^4) \cdot x^{6a} dx &= \frac{1}{6a+1} \left\{ \frac{3}{2} l3 + \frac{1}{2} \pi \sqrt{3} - 4 + 4 \sum_1^a \frac{18n-5}{(6n-3)(6n-1)(6n+1)} \right\} \\
 17) \int l(1+x^2+x^4) \cdot x^{6a+1} dx &= \frac{1}{6a+2} \left\{ \frac{3}{2} l3 + \frac{\pi}{2\sqrt{3}} - 2 + \sum_1^a \frac{9n-1}{(3n-1)3n(3n+1)} \right\} \\
 18) \int l(1+x^2+x^4) \cdot x^{6a+2} dx &= \frac{4}{3(2a+1)} \left\{ \frac{1}{2} + \sum_0^a \frac{18n+1}{(6n-1)(6n+1)(6n+3)} \right\} \\
 19) \int l(1+x^2+x^4) \cdot x^{6a+3} dx &= \frac{1}{6a+4} \left\{ \frac{3}{2} l3 - \frac{\pi}{2\sqrt{3}} + \sum_1^a \frac{9n+2}{3n(3n+1)(3n+2)} \right\} \\
 20) \int l(1+x^2+x^4) \cdot x^{6a+4} dx &= \frac{1}{6a+5} \left\{ \frac{3}{2} l3 - \frac{1}{2} \pi \sqrt{3} + 4 \sum_1^a \frac{18n+7}{(6n+1)(6n+3)(6n+5)} \right\} \\
 21) \int l(1+x^2+x^4) \cdot x^{6a+5} dx &= \frac{1}{6a+6} \sum_0^a \frac{9n+5}{(3n+1)(3n+2)(3n+3)}
 \end{aligned}$$

Sur 10) à 21) voyez Oettinger, Gr. 39, 121

$$22) \int l(q+lx) \cdot x^{p-1} dx = \frac{1}{p} \{ lq - e^{-pq} Ei(pq) \} \text{ V. T. 125, N. 1.}$$

$$23) \int l(q-lx) \cdot x^{p-1} dx = \frac{1}{p} \{ lq - e^{pq} Ei(-pq) \} \text{ V. T. 125, N. 2.}$$

F. Alg. rat. fract. à dén. bin.;

Log. en num. lw .

TABLE 108.

Lim. 0 et 1.

$$1) \int lx \frac{dx}{1+x} = -\frac{1}{12} \pi^2 \text{ (VIII, 264).}$$

$$2) \int lx \frac{x dx}{1+x} = \frac{1}{12} \pi^2 - 1 \text{ V. T. 30, N. 2 et T. 108, N. 1.}$$

$$3) \int l x \frac{x^2 dx}{1+x} = \frac{3}{4} - \frac{1}{12} \pi^2 \text{ V. T. 107, N. 1 et T. 108, N. 2.}$$

$$4) \int l x \cdot x^{2n} \frac{dx}{1+x} = -\frac{1}{12} \pi^2 + \sum_1^{2n} \frac{(-1)^{n-1}}{n^2} \quad 5) \int l x \cdot x^{2n-1} \frac{dx}{1+x} = \frac{1}{12} \pi^2 + \sum_1^{2n-1} \frac{(-1)^n}{n^2}$$

Sur 4) et 5) voyez Oettinger, Gr. 39, 425.

$$6) \int l x \frac{dx}{1-x} = -\frac{1}{6} \pi^2 \text{ (VIII, 264).}$$

$$7) \int l x \frac{x dx}{1-x} = 1 - \frac{1}{6} \pi^2 \text{ V. T. 30, N. 2 et T. 108, N. 6.}$$

$$8) \int l x \cdot x^{p-1} \frac{dx}{1-x} = -\sum_0^{\infty} \frac{1}{(p+n)^2} \text{ (IV, 217).}$$

$$9) \int l x \frac{1+x}{1-x} dx = 1 - \frac{1}{3} \pi^2 \text{ V. T. 30, N. 2 et T. 108, N. 6.}$$

$$10) \int l x \frac{dx}{1+x^2} = \sum_0^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2} \text{ (VIII, 474).}$$

$$11) \int l x \frac{dx}{1-x^2} = -\frac{1}{8} \pi^2 \text{ (VIII, 567).}$$

$$12) \int l x \frac{x^{q^2-1} dx}{1-x^{q^2}} = -\frac{\pi^2}{8q^2} \text{ (VIII, 567).}$$

$$13) \int l x \frac{1-x^2}{1+x^{2p}} x^{p-1} dx = -\left(\frac{\pi}{2p}\right)^2 \sin \frac{\pi}{2p} \cdot \sec^2 \frac{\pi}{2p} \text{ (IV, 217).}$$

$$14) \int l x \frac{1+x^2}{1-x^{2p}} x^{p-1} dx = -\left(\frac{\pi}{2p}\right)^2 \sec^2 \frac{\pi}{2p} \text{ (IV, 217).}$$

$$15) \int l x \frac{x^{a-1} + x^{b-a-1}}{1-x^b} dx = -\left(\frac{\pi}{b}\right)^2 \operatorname{Cosec}^2 \frac{a\pi}{b} \text{ (IV, 217).}$$

$$1) \int (l x)^2 \cdot x^n \frac{dx}{1+x} = (-1)^n \sum_n^{\infty} \frac{(-1)^n}{(n+1)^2}$$

$$2) \int (l x)^2 \cdot x^n \frac{dx}{1-x} = 2 \sum_n^{\infty} \frac{1}{(1+n)^2}$$

Sur 1) et 2) voyez Oettinger, Gr. 39, 425.

$$3) \int (l x)^2 \frac{dx}{1+x^2} = \frac{1}{16} \pi^2 \text{ (IV, 219).}$$

$$4) \int (l x)^2 \cdot x^{2n} \frac{dx}{1-x^2} = 2 \sum_n^{\infty} \frac{1}{(2n+1)^2} \text{ Oettinger, Gr. 39, 425.}$$

$$5) \int (lx)^2 \frac{1+x^2}{1+x^4} dx = \frac{3}{64} \pi^2 \sqrt{2} \text{ (VIII, 568).} \quad 6) \int (lx)^2 \frac{1-x}{1-x^3} dx = \frac{1}{27} \pi^2 \sqrt{3} \text{ (IV, 219).}$$

$$7) \int (lx)^2 \frac{x^{p-q-1} + x^{p+q-1}}{1+x^{2p}} dx = \frac{\pi^2}{8p^2} \left(2 \operatorname{Sec}^2 \frac{q\pi}{2p} - \operatorname{Sec} \frac{q\pi}{2p} \right) \text{ (VIII, 568).}$$

$$8) \int (lx)^2 \frac{x^{p-q-1} - x^{p+q-1}}{1-x^{2p}} dx = \frac{\pi^2}{4p^2} \operatorname{Sin} \frac{q\pi}{2p} \cdot \operatorname{Sec}^2 \frac{q\pi}{2p} \text{ (VIII, 568).}$$

$$9) \int (lx)^2 \frac{dx}{1+x} = -\frac{7}{120} \pi^4 \text{ (IV, 220).}$$

$$10) \int (lx)^2 \cdot x^a \frac{dx}{1+x} = (-1)^{a-1} \sum_a \frac{(-1)^n}{(n+1)^4} \text{ Oettinger, Gr. 39, 425.}$$

$$11) \int (lx)^2 \frac{dx}{1-x} = -\frac{1}{15} \pi^4 \text{ (IV, 220).}$$

$$12) \int (lx)^2 \cdot x^a \frac{dx}{1-x} = -\frac{1}{15} \pi^4 + 6 \sum_1^a \frac{1}{n^4} \text{ Oettinger, Gr. 39, 425.}$$

$$13) \int (lx)^2 \frac{dx}{1-x^2} = -\frac{1}{16} \pi^4 \text{ V. T. 109, N. 9, 11.}$$

$$14) \int (lx)^2 \cdot x^{2a} \frac{dx}{1-x^2} = -\frac{1}{16} \pi^4 + 6 \sum_1^a \frac{1}{(2n-1)^4} \left. \begin{array}{l} \\ \\ \end{array} \right\} \text{Oettinger, Gr. 39, 241}$$

$$15) \int (lx)^2 \frac{x^{q-1} - x^{p-q-1}}{1+x^p} dx = -\left(\frac{\pi}{p}\right)^4 \operatorname{Cosec}^4 \frac{q\pi}{p} \cdot \operatorname{Cos} \frac{q\pi}{p} \cdot \left(6 - \operatorname{Sin}^2 \frac{q\pi}{p}\right)$$

$$16) \int (lx)^2 \frac{x^{q-1} + x^{p-q-1}}{1-x^p} dx = -2 \left(\frac{\pi}{p}\right)^4 \operatorname{Cosec}^4 \frac{q\pi}{p} \cdot \left(1 + 2 \operatorname{Cos}^2 \frac{q\pi}{p}\right) \text{ (IV, 219).}$$

$$17) \int (lx)^2 \frac{dx}{1+x^2} = \frac{5}{64} \pi^4 \text{ (IV, 220).}$$

$$18) \int (lx)^2 \frac{x^{q-1} + x^{p-q-1}}{1+x^p} dx = \left(\frac{\pi}{p}\right)^4 \operatorname{Cosec}^4 \frac{q\pi}{p} \cdot \left(24 - 20 \operatorname{Sin}^2 \frac{q\pi}{p} + \operatorname{Sin}^4 \frac{q\pi}{p}\right)$$

$$19) \int (lx)^2 \frac{x^{q-1} - x^{p-q-1}}{1-x^p} dx = 8 \left(\frac{\pi}{p}\right)^4 \operatorname{Cosec}^4 \frac{q\pi}{p} \cdot \operatorname{Cos} \frac{q\pi}{p} \cdot \left(2 + \operatorname{Cos}^2 \frac{q\pi}{p}\right)$$

Sur 18) et 19) voyez Oettinger, Gr. 39, 241

$$20) \int (lx)^2 \frac{dx}{1+x} = -\frac{31}{252} \pi^4 \text{ (IV, 220).}$$

$$21) \int (lx)^2 \frac{dx}{1-x} = -\frac{8}{63} \pi^4 \text{ (IV, 220).}$$

$$22) \int (lx)^2 \frac{dx}{1-x^2} = -\frac{1}{8} \pi^4 \text{ V. T. 109, N. 20, 21.}$$

$$23) \int (lx)^a \frac{x^{q-1} - x^{p-q-1}}{1+x^p} dx = -\left(\frac{\pi}{p}\right)^a \operatorname{Cosec}^a \frac{q\pi}{p} \cdot \operatorname{Cos} \frac{q\pi}{p} \cdot \left(120 - 60 \operatorname{Sin}^2 \frac{q\pi}{p} + \operatorname{Sin}^4 \frac{q\pi}{p}\right)$$

$$24) \int (lx)^a \frac{x^{q-1} + x^{p-q-1}}{1-x^p} dx = -8 \left(\frac{\pi}{p}\right)^a \operatorname{Cosec}^a \frac{q\pi}{p} \cdot \left(15 - 15 \operatorname{Sin}^2 \frac{q\pi}{p} + 2 \operatorname{Sin}^4 \frac{q\pi}{p}\right)$$

Sur 23) et 24) voyez Oettinger, Gr. 39, 241

$$25) \int (lx)^a \frac{dx}{1+x^2} = \frac{61}{256} \pi^7 \text{ (IV, 221).}$$

$$26) \int (lx)^a \frac{x^{q-1} + x^{p-q-1}}{1+x^p} dx = \left(\frac{\pi}{p}\right)^7 \operatorname{Cosec}^7 \frac{q\pi}{p} \cdot \left(720 - 840 \operatorname{Sin}^2 \frac{q\pi}{p} + 182 \operatorname{Sin}^4 \frac{q\pi}{p} - \operatorname{Sin}^6 \frac{q\pi}{p}\right)$$

$$27) \int (lx)^a \frac{x^{q-1} - x^{p-q-1}}{1-x^p} dx = 16 \left(\frac{\pi}{p}\right)^7 \operatorname{Cosec}^7 \frac{q\pi}{p} \cdot \operatorname{Cos} \frac{q\pi}{p} \cdot \left(45 - 30 \operatorname{Sin}^2 \frac{q\pi}{p} + 2 \operatorname{Sin}^4 \frac{q\pi}{p}\right)$$

Sur 26) et 27) voyez Oettinger, Gr. 39, 241

$$28) \int (lx)^7 \frac{dx}{1+x} = -\frac{127}{240} \pi^8 \text{ (IV, 221).}$$

$$29) \int (lx)^7 \frac{dx}{1-x} = -\frac{8}{15} \pi^8 \text{ V. T. 109, N. 28, 30.}$$

$$30) \int (lx)^7 \frac{dx}{1-x^2} = -\frac{17}{32} \pi^8 \text{ (IV, 221).}$$

$$31) \int (lx)^a \frac{x^{q-1} - x^{p-q-1}}{1+x^p} dx = -\left(\frac{\pi}{p}\right)^8 \operatorname{Cosec}^8 \frac{q\pi}{p} \cdot \operatorname{Cos} \frac{q\pi}{p} \cdot \left(5040 - 4200 \operatorname{Sin}^2 \frac{q\pi}{p} + 546 \operatorname{Sin}^4 \frac{q\pi}{p} - \operatorname{Sin}^6 \frac{q\pi}{p}\right)$$

$$32) \int (lx)^a \frac{x^{q-1} + x^{p-q-1}}{1-x^p} dx = -16 \left(\frac{\pi}{p}\right)^8 \operatorname{Cosec}^8 \frac{q\pi}{p} \cdot \left(315 - 420 \operatorname{Sin}^2 \frac{q\pi}{p} + 126 \operatorname{Sin}^4 \frac{q\pi}{p} - 4 \operatorname{Sin}^6 \frac{q\pi}{p}\right)$$

$$33) \int (lx)^a \frac{x^{q-1} - x^{p-q-1}}{1-x^p} dx = 128 \left(\frac{\pi}{p}\right)^8 \operatorname{Cosec}^8 \frac{q\pi}{p} \cdot \operatorname{Cos} \frac{q\pi}{p} \cdot \left(315 - 315 \operatorname{Sin}^2 \frac{q\pi}{p} + 63 \operatorname{Sin}^4 \frac{q\pi}{p} - \operatorname{Sin}^6 \frac{q\pi}{p}\right)$$

Sur 31) à 33) voyez Oettinger, Gr. 39, 241.

$$1) \int (lx)^{2a} \frac{dx}{1+x} = \frac{2^{2a}-1}{2^{2a}} 1^{2a/2} \sum_{i=1}^{\infty} \frac{1}{2^{2a+1}} \text{ (IV, 221).}$$

$$2) \int (lx)^{2a-1} \frac{dx}{1+x} = \frac{1-2^{2a-1}}{2a} \pi^{2a} B_{2a-1} \text{ (VIII, 577).}$$

- 3) $\int (lx)^{a-1} \frac{dx}{1+x} = 1^{a-1/1} \sum_0^{\infty} \frac{(-1)^{n+a-1}}{(n+1)^a}$ (VIII, 577).
- 4) $\int (lx)^{b-1} \frac{x^q dx}{1+x} = 1^{b-1/1} \sum_0^{\infty} \frac{(-1)^{n+b-1}}{(q+n+1)^b}$ (VIII, 577).
- 5) $\int (lx)^{2a-1} \frac{dx}{1-x} = -\frac{1}{a} 2^{2a-2} \pi^{2a} B_{2a-1}$ (VIII, 577).
- 6) $\int (lx)^{a-1} \frac{dx}{1-x} = (-1)^{a-1} 1^{a-1/1} \sum_0^{\infty} \frac{1}{(n+1)^a}$ (VIII, 577).
- 7) $\int (lx)^{b-1} \frac{x^q dx}{1-x} = (-1)^{b-1} 1^{b-1/1} \sum_0^{\infty} \frac{1}{(q+n+1)^b}$ (VIII, 577).
- 8) $\int (lx)^{p-1} \frac{x^{r-1} dx}{1-qx^r} = \frac{1}{qr^p} \Gamma(p) \sum_1^{\infty} \frac{q^n}{n^p}$ V. T. 83, N. 5.
- 9) $\int (lx)^{a-1} \frac{1-x^b}{1-x} dx = (-1)^{a-1} 1^{a/1} \sum_1^b \frac{1}{n^a}$ (IV, 222).
- 10) $\int (lx)^q \cdot (x-1)^a x^{p-1} \left(p + \frac{ax}{x-1}\right) dx = (-1)^q \Gamma(q) \Delta^a \cdot p^{-q}$ V. T. 83, N. 13.
- 11) $\int (lx)^a \frac{dx}{1+x^2} = (-1)^a 1^{a/1} \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^{a+1}}$ (VIII, 474).
- 12) $\int (lx)^{2a} \frac{dx}{1-x^2} = \frac{2^{2a+1}-1}{2^{2a+1}} 1^{2a/1} \sum_1^{\infty} \frac{1}{n^{2a+1}}$ (IV, 222).
- 13) $\int (lx)^{p-1} \frac{x^q dx}{1-x^2} = (-1)^{p-1} \Gamma(p) \sum_0^{\infty} \frac{1}{(q+2n+1)^p}$ V. T. 310, N. 11.
- 14) $\int (lx)^a \frac{x^{p-1} dx}{1+x^q} = (-1)^a 1^{a/1} \sum_0^{\infty} \frac{(-1)^n}{(p+nq)^{a+1}}$ Oettinger, Gr. 39, 241.
- 15) $\int (lx)^a \frac{x^{p-1} dx}{1-x^q} = (-1)^a 1^{a/1} \sum_0^{\infty} \frac{1}{(p+nq)^{a+1}}$ (IV, 223).
- 16) $\int (lx)^{2a-1} \frac{x^p + x^{-p}}{1-x^q} x^{q-1} dx = -\sum_a^{\infty} \frac{(2\pi)^{2n}}{2n} \frac{1}{1^{2n-2a/1}} \left(\frac{p}{q}\right)^{2n-2a} B_{2n-1}$ V. T. 83, N. 12.

- 1) $\int lx \frac{dx}{(1+x)^2} = -12$ (VIII, 590).
- 2) $\int lx \frac{1-(-1)^a x^{a+1}}{(1+x)^2} dx = -\frac{1}{12} (a+1) \pi^2 + \sum_1^a (-1)^{n-1} \frac{a-n+1}{n^2}$ Oettinger, Gr. 39, 425.

- 3) $\int lx \frac{1-x^{a+1}}{(1-x)^2} dx = -\frac{1}{6}(a+1)\pi^2 + \sum_1^a \frac{a-n+1}{n^2}$ Oettinger, Gr. 39, 425.
- 4) $\int lx \frac{x dx}{(1+x^2)^2} = -\frac{1}{4} \log 2$ (VIII, 590).
- 5) $\int lx \frac{1-x^{2a+1}}{(1-x^2)^2} dx = -\frac{1}{8}(a+1)\pi^2 + \sum_1^a \frac{a-n+1}{(2n-1)^2}$ Oettinger, Gr. 39, 425.
- 6) $\int \left\{ \frac{1+plx}{1-x} + \frac{x lx}{(1-x)^2} \right\} x^{p-1} dx = -1$ (VIII, 226).
- 7) $\int (lx)^2 \frac{1-(-1)^a x^{a+1}}{(1+x)^2} dx = 2(a+1) \sum_a^\infty \frac{(-1)^n}{(n+1)^2} + 2 \sum_1^a \frac{(-1)^{n-1}}{n^2}$
- 8) $\int \frac{1-x^{a-1}}{(1-x)^2} (lx)^2 dx = 2(a+1) \sum_a^\infty \frac{1}{(1+n)^2} + 2 \sum_1^a \frac{1}{n^2}$
- 9) $\int \frac{1-x^{2a+1}}{(1-x^2)^2} (lx)^2 dx = 2 \sum_a^\infty \frac{1}{(2n+1)^2} + 2 \sum_1^a \frac{n}{(2n-1)^2}$
- 10) $\int \frac{1-(-1)^a x^{a+1}}{(1+x)^2} (lx)^2 dx = -\frac{7}{120}(a+1)\pi^4 + 6 \sum_1^a (-1)^{n-1} \frac{a-n+1}{n^4}$
- 11) $\int \frac{1-x^{a+1}}{(1-x)^2} (lx)^2 dx = -\frac{1}{15}(a+1)\pi^4 + 6 \sum_1^a \frac{a-n+1}{n^4}$
- 12) $\int \frac{1-x^{2a+1}}{(1-x^2)^2} (lx)^2 dx = -\frac{1}{16}(a+1)\pi^4 + 6 \sum_1^a \frac{a-n+1}{(2n-1)^4}$

Sur 7) à 12) voyez Oettinger, Gr. 39, 425.

- 1) $\int lx \frac{1-x^2}{1+x^2} \frac{dx}{x} = -\infty =$
- 2) $\int lx \frac{1+x^2}{1-x^2} \frac{dx}{x} \text{ (IV, 218).}$
- 3) $\int lx \frac{x^{p+q} - x^{p-q}}{1+x^{2p}} \frac{dx}{x} = \frac{\pi^2}{4p^2} \sin \frac{q\pi}{2p} \cdot \sec^2 \frac{q\pi}{2p} \text{ (VIII, 567).}$
- 4) $\int lx \frac{x^{p+q} + x^{p-q}}{1-x^{2p}} \frac{dx}{x} = -\frac{\pi^2}{4p^2} \sec^2 \frac{q\pi}{2p} \text{ (VIII, 567).}$
- 5) $\int lx \frac{x^p - x^{-p}}{(x^p + x^{-p})^2} \frac{dx}{x} = \frac{\pi}{4p^2} \text{ V. T. 2, N. 12.}$

- 6) $\int lx \frac{(p+q)(x^{p-q} - x^{q-p}) + (p-q)(x^{p+q} - x^{-(p+q)})}{(x^p + x^{-p})^2} \frac{dx}{x} = \frac{\pi}{2p} \operatorname{Sec} \frac{q\pi}{2p} [p > q] \text{ V. T. 4, N. 14.}$
- 7) $\int lx \frac{(p+q)(x^{p-q} - x^{q-p}) + (q-p)(x^{p+q} - x^{-(p+q)})}{(x^p - x^{-p})^2} \frac{dx}{x} = -\frac{\pi}{2p} \operatorname{Tg} \frac{q\pi}{2p} [p > q] \text{ V. T. 4, N. 15.}$
- 8) $\int lx \frac{x^q - x^{-q}}{(x^q + x^{-q})^{2p+1}} \frac{dx}{x} = \frac{1}{2pq^2} \frac{\{\Gamma(p)\}^2}{\Gamma(2p)} \text{ V. T. 4, N. 16.}$
- 9) $\int (lx)^{2a-1} \frac{1}{x^q - x^{-q}} \frac{dx}{x} = \frac{1-2^{2a}}{4a} \left(\frac{\pi}{q}\right)^{2a} B_{2a-1} \text{ V. T. 84, N. 14.}$
- 10) $\int (lx)^{2a-1} \frac{1+x^q}{1-x^q} \frac{dx}{x} = -\frac{1}{a} 2^{2a-1} \left(\frac{\pi}{q}\right)^{2a} B_{2a-1} \text{ V. T. 83, N. 11.}$
- 11) $\int (lx)^{2a} \frac{1}{(x^q + x^{-q})^2} \frac{dx}{x} = \frac{2^{2a-1}-1}{(2q)^{2a+1}} \pi^{2a} B_{2a-1} \text{ V. T. 86, N. 2.}$
- 12) $\int (lx)^{2a+1} \frac{1}{(x^q + x^{-q})^2} \frac{dx}{x} = \frac{1-2^{2a}}{(4q)^{2a+1} q} 1^{2a+1/2} \sum_1^{\infty} \frac{1}{n^{2a+1}} \text{ V. T. 86, N. 8.}$
- 13) $\int (lx)^p \frac{1}{(x^q + x^{-q})^2} \frac{dx}{x} = \frac{\Gamma(p+1)}{(-2q)^{p+1}} \sum_0^{\infty} \frac{(-1)^{n+1}}{(n+1)^p} \text{ V. T. 86, N. 6.}$
- 14) $\int (lx)^{2a} \frac{1}{(x^q - x^{-q})^2} \frac{dx}{x} = \frac{1}{4q^{2a+1}} \pi^{2a} B_{2a-1} \text{ V. T. 86, N. 5.}$
- 15) $\int (lx)^{2a+1} \frac{1}{(x^q - x^{-q})^2} \frac{dx}{x} = -\frac{1}{(2q)^{2a+1}} 1^{2a+1/2} \sum_1^{\infty} \frac{1}{n^{2a+1}} \text{ V. T. 86, N. 4.}$
- 16) $\int (lx)^p \frac{1}{(x^q - x^{-q})^2} \frac{dx}{x} = -\frac{\Gamma(p+1)}{(-2q)^{p+1}} \sum_0^{\infty} \frac{1}{(n+1)^p} \text{ V. T. 86, N. 7.}$
- 17) $\int (lx)^{2a} \frac{x^q + x^{-q}}{x^p + x^{-p}} \frac{dx}{x} = \frac{\pi}{2p} \frac{d^{2a}}{dq^{2a}} \cdot \operatorname{Sec} \frac{q\pi}{2p} \text{ (VIII, 576).}$
- 18) $\int (lx)^{2a+1} \frac{x^q - x^{-q}}{x^p + x^{-p}} \frac{dx}{x} = \frac{\pi}{2p} \frac{d^{2a+1}}{dq^{2a+1}} \cdot \operatorname{Sec} \frac{q\pi}{2p} \text{ (VIII, 576).}$
- 19) $\int (lx)^{2a+1} \frac{x^q + x^{-q}}{x^p - x^{-p}} \frac{dx}{x} = \frac{\pi}{2p} \frac{d^{2a+1}}{dq^{2a+1}} \cdot \operatorname{Cot} \frac{q\pi}{2p} \text{ (VIII, 576).}$
- 20) $\int (lx)^{2a} \frac{x^q - x^{-q}}{x^p - x^{-p}} \frac{dx}{x} = \frac{\pi}{2p} \frac{d^{2a}}{dq^{2a}} \cdot \operatorname{Cot} \frac{q\pi}{2p} \text{ (VIII, 576).}$
- 21) $\int lx \frac{x^2}{1-x^2} \frac{dx}{1+x^2} = -\frac{\pi^2}{16(2+\sqrt{2})} \text{ (IV, 218).}$

F. Alg. rat. fract. à dén. trinôme;
Log. en num. $(lx)^a$.

TABLE 113.

Lim. 0 et 1.

- 1) $\int lx \frac{dx}{1+x+x^2} = -\frac{2}{27} \pi^2$ (IV, 217*).
- 2) $\int lx \frac{x dx}{1+x+x^2} = -\frac{1}{54} \pi^2$ (IV, 218*).
- 3) $\int lx \frac{dx}{1-x+x^2} = -\frac{4}{27} \pi^2$ (IV, 218).
- 4) $\int lx \frac{x dx}{1-x+x^2} = -\frac{5}{108} \pi^2$ (IV, 218).
- 5) $\int lx \frac{\cos \lambda - x}{1-2x \cos \lambda + x^2} dx = -\frac{1}{6} \pi^2 + \frac{1}{2} \pi \lambda - \frac{1}{4} \lambda^2$ V. T. 88, N. 8.
- 6) $\int lx \frac{1-x^2}{1+2px^2+x^4} dx = \frac{\pi}{2\sqrt{2}(p-1)} l \frac{\sqrt{p-1}-\sqrt{p+1}+\sqrt{2}}{\sqrt{p-1}+\sqrt{p+1}-\sqrt{2}} [p^2 > 1], =$
 $= -\frac{1}{8} \pi \operatorname{Arccos} p \cdot \sqrt{\frac{2}{1-p}} [p^2 < 1]$ V. T. 88, N. 9.
- 7) $\int (lx)^2 \frac{dx}{1+2x \cos \lambda + x^2} = \frac{1}{6} \lambda \operatorname{Cosec} \lambda \cdot (\pi^2 - \lambda^2)$ (IV, 221).
- 8) $\int (lx)^4 \frac{dx}{1+2x \cos \lambda + x^2} = \frac{1}{30} \lambda \operatorname{Cosec} \lambda \cdot (\pi - \lambda^2)(7\pi^2 - 3\lambda^2)$ (IV, 221).
- 9) $\int (lx)^{2a} \frac{dx}{1+x^2-2x \cos 2p\pi} = \frac{1^{2a+1}}{\sin 2p\pi} \sum_{n=1}^{\infty} \frac{\sin 2np\pi}{n^{2a+1}}$ V. T. 88, N. 5.
- 10) $\int (lx)^{2a+1} \frac{\cos 2p\pi - x}{1+x^2-2x \cos 2p\pi} dx = 1^{2a+1/2} \sum_{n=1}^{\infty} \frac{\cos 2np\pi}{n^{2a+2}}$ V. T. 88, N. 6.
- 11) $\int (lx)^{r-1} \frac{\cos \lambda - px}{1+p^2 x^2 - 2px \cos \lambda} x^{q-1} dx = (-1)^r \Gamma(r) \sum_{n=1}^{\infty} \frac{p^{n-1} \cos n\lambda}{(q+n-1)^r}$ (IV, 224).

F. Alg. rat. fract.;

Log. en num. d'autre forme ent.

TABLE 114.

Lim. 0 et 1.

- 1) $\int l(1+x) \frac{dx}{x} = \frac{1}{12} \pi^2$ (VIII, 265).
- 2) $\int l(1+x) \frac{(p-1)x^{p-1} - px^{-p}}{x} dx = 2l2 - \pi \operatorname{Cosec} p\pi [p < 1]$ V. T. 4, N. 1.
- 3) $\int l(1+x) \frac{dx}{1+x^2} = \frac{1}{8} \pi l2$ (VIII, 322).
- 4) $\int l(1+x) \frac{dx}{x(1+x)} = \frac{1}{12} \pi^2 - \frac{1}{2} (l2)^2$ V. T. 114, N. 25.
- 5) $\int l(1+x) \frac{dx}{(px+q)^2} = \frac{1}{p(p-q)} l \frac{p+q}{q} + \frac{2}{q^2-p^2} l2$ (VIII, 591*).

$$6) \int l(1+x) \frac{dx}{(1+x)^{q+1}} = -\frac{1}{2^q q} l2 + \frac{2^q - 1}{2^q q^2}$$

$$7) \int l(1+x) \frac{1+x^{2a+1}}{1+x} dx = 2l2 \cdot \sum_0^a \frac{1}{2n+1} - \sum_1^{2a+1} \frac{1}{n} \sum_1^n \frac{(-1)^{m-1}}{m}$$

$$8) \int l(1+x) \frac{1-x^{2a}}{1+x} dx = 2l2 \cdot \sum_0^{a-1} \frac{1}{2n+1} - \sum_1^{2a} \frac{1}{n} \sum_1^n \frac{(-1)^{m-1}}{m}$$

$$9) \int l(1+x) \frac{1-x^{2a}}{1-x} dx = 2l2 \cdot \sum_0^{a-1} \frac{1}{2n+1} + \sum_1^{2a} \frac{(-1)^n}{n} \sum_1^n \frac{(-1)^{m-1}}{m}$$

$$10) \int l(1+x) \frac{1-x^{2a+1}}{1-x} dx = 2l2 \cdot \sum_0^a \frac{1}{2n+1} + \sum_1^{2a+1} \frac{(-1)^n}{n} \sum_1^n \frac{(-1)^{m-1}}{m}$$

Oettinger, Gr. 39, 121.

$$11) \int l(1+x) \frac{1+x^2}{q^2+x^2} \frac{dx}{1+q^2 x^2} = \frac{\pi}{2q(1+q^2)} \left\{ \frac{\pi}{2} l(1+q^2) - 2 \operatorname{Arctg} q \cdot lq \right\} \text{ (VIII, 464).}$$

$$12) \int l(1+x) \frac{1+x^2}{(1+x)^4} dx = \frac{1}{4} \left(\frac{1}{2} - l2 \right) \text{ V. T. 114, N. 13.}$$

$$13) \int l(1+x) \frac{1+x^2}{(px+q)^2} \frac{dx}{(qx+p)^2} = \frac{1}{p^2-q^2} \left[\frac{1}{q-p} \left\{ \frac{p+q}{pq} l(p+q) + \frac{1}{p} lq + \frac{1}{q} lp \right\} + \frac{4}{q^2-p^2} l2 \right] \\ \text{V. T. 114, N. 5.}$$

$$14) \int l(1-x) \frac{dx}{x} = -\frac{1}{6} \pi^2 \text{ (VIII, 265).}$$

$$15) \int l(1-x) \frac{1-(-1)^a x^a}{1+x} dx = \sum_1^a \frac{(-1)^n}{n} \sum_1^n \frac{1}{m} \left\{ \begin{array}{l} \text{Oettinger, Gr. 39, 121.} \end{array} \right.$$

$$16) \int l(1-x) \frac{1-x^a}{1-x} dx = -\sum_1^a \frac{1}{n} \sum_1^n \frac{1}{m}$$

$$17) \int l(1-x) \frac{dx}{1+x^2} = \frac{\pi}{8} l2 + \sum_0^\infty \frac{(-1)^{n-1}}{(2n+1)^2} \text{ V. T. 114, N. 24 et T. 115, N. 19.}$$

$$18) \int l\left(1-\frac{1}{2}x\right) \frac{dx}{x} = \frac{1}{2} (l2)^2 - \frac{1}{12} \pi^2 \text{ (VIII, 699).}$$

$$19) \int l(1-2x) \frac{dx}{x} = -\frac{1}{4} \pi^2 + \pi i l2 \text{ (VIII, 699).}$$

$$20) \int l(p+x) \frac{dx}{p+x^2} = \frac{1}{2\sqrt{p}} \operatorname{Arccot}(\sqrt{p}) \cdot l\{(1+p)p\} \text{ V. T. 114, N. 21.}$$

$$21) \int l(1+px) \frac{dx}{1+px^2} = \frac{1}{2\sqrt{p}} \operatorname{Arctg}(\sqrt{p}) \cdot l(1+p) \text{ (VIII, 463*)}$$

F. Alg. rat. fract.;

Log. en num. d' autre forme ent.

TABLE 114, suite.

Lim. 0 et 1.

$$22) \int l(px+q) \frac{dx}{(1+x)^2} = \frac{1}{p-q} \left\{ \frac{1}{2} (p+q) l(p+q) - q lq - p l2 \right\} \text{ (VIII, 591*)}.$$

$$23) \int l(1+px) \frac{1-x^2}{(1+x^2)^2} dx = \frac{1}{2} \frac{(1+p)^2}{1+p^2} l(1+p) - \frac{1}{2} \frac{p}{1+p^2} l2 - \frac{\pi}{4} \frac{p^2}{1+p^2} \text{ (IV, 224)}.$$

$$24) \int l(1+x^2) \frac{dx}{1+x^2} = \frac{1}{2} \pi l2 - \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 231, N. 26.}$$

$$25) \int l(1+x^2) \frac{dx}{x(1+x^2)} = \frac{1}{2} \left\{ \frac{1}{12} \pi^2 - \frac{1}{2} (l2)^2 \right\} \text{ V. T. 114, N. 1.}$$

$$26) \int l(1-x^2) \frac{dx}{1+x^2} = \frac{\pi}{4} l2 + \sum_{n=0}^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2} \text{ V. T. 114, N. 24 et T. 115, N. 20.}$$

$$27) \int l(\cos^2 \lambda + x^2 \sin^2 \lambda) \frac{dx}{1-x^2} = -\lambda^2 \text{ Winckler, Sitz. Ber. Wien. B. 43, 315.}$$

$$28) \int l(q^2+x^2) \frac{dx}{(1+px)^2} = \frac{2}{1+p} lq + \frac{1}{1+p^2 q^2} \left\{ 2q \operatorname{Arccot} q + \frac{1-pq^2}{1+p} l \frac{1+q^2}{q^2} - \frac{2}{p} l(1+p) \right\} \text{ (VIII, 592).}$$

$$29) \int l(1-x^4) \frac{dx}{1+x^2} = \frac{3\pi}{4} l2 + 2 \sum_{n=0}^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2} \text{ V. T. 114, N. 24, 26.}$$

$$30) \int l(1+x^2) \frac{dx}{x} = \frac{1}{12p} \pi^2 \text{ V. T. 114, N. 1.}$$

$$31) \int l(1-x^2) \frac{dx}{x} = -\frac{1}{6p} \pi^2 \text{ V. T. 114, N. 14.}$$

$$32) \int l(1+x+x^2) \frac{dx}{x} = \frac{1}{9} \pi^2 \text{ V.T. 113, N. 1, 2. } 33) \int l(1-x+x^2) \frac{dx}{x} = -\frac{1}{18} \pi^2 \text{ V.T. 113, N. 3, 4.}$$

$$34) \int l(1+2x \cos \lambda + x^2) \frac{dx}{x} = \frac{1}{6} \pi^2 - \frac{1}{2} \lambda^2 \text{ (VIII, 360*)}.$$

F. Alg. rat. fract.;

Log. en num. de forme fract.

TABLE 115.

Lim. 0 et 1.

$$1) \int l \frac{1+x}{2} \frac{dx}{1-x} = \frac{1}{2} (l2)^2 - \frac{1}{12} \pi^2 \text{ (VIII, 268).}$$

$$2) \int l \frac{1+p^2 x^2}{1+p^2} \frac{dx}{1-x^2} = -(\operatorname{Arctg} p)^2 \text{ Winckler, Sitz. Ber. Wien. B. 43, 315.}$$

- 3) $\int \frac{1+x}{x} \frac{dx}{1+x^2} = \frac{\pi}{8} \log 2 + \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ (VIII, 534).
- 4) $\int \frac{(1+x)^2}{x} \frac{dx}{1+x^2} = \frac{\pi}{4} \log 2 + \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ (VIII, 534*).
- 5) $\int \frac{1-x}{x} \frac{dx}{1+x^2} = \frac{\pi}{8} \log 2$ V. T. 108, N. 10 et T. 114, N. 17.
- 6) $\int \frac{(1-x)^2}{x} \frac{dx}{1+x^2} = \frac{\pi}{4} \log 2 + \sum_{n=0}^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2}$ V. T. 108, N. 10 et T. 114, N. 17.
- 7) $\int \frac{1+x^2}{x} \frac{dx}{1+x^2} = \frac{\pi}{2} \log 2$ V. T. 108, N. 10 et T. 114, N. 24.
- 8) $\int \frac{1+x^2}{x^2} \frac{dx}{1+x^2} = \frac{\pi}{2} \log 2 + \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 108, N. 10 et T. 114, N. 24.
- 9) $\int \frac{1-x^2}{x} \frac{dx}{1+x^2} = \frac{\pi}{4} \log 2$ V. T. 108, N. 10 et T. 114, N. 26.
- 10) $\int \frac{1-x^2}{x^2} \frac{dx}{1+x^2} = \frac{\pi}{4} \log 2 + \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 108, N. 10 et T. 114, N. 26.
- 11) $\int \frac{1-x^4}{x} \frac{dx}{1+x^2} = \frac{3\pi}{4} \log 2 + \sum_{n=0}^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2}$ V. T. 108, N. 10 et T. 114, N. 29.
- 12) $\int \frac{1-x^4}{x^2} \frac{dx}{1+x^2} = \frac{3\pi}{4} \log 2$ V. T. 108, N. 10 et T. 114, N. 29.
- 13) $\int \frac{1-x^4}{x^3} \frac{dx}{1+x^2} = \frac{3\pi}{4} \log 2 + \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 108, N. 10 et T. 114, N. 29.
- 14) $\int \frac{1-x^4}{x^4} \frac{dx}{1+x^2} = \frac{3\pi}{4} \log 2 + 2 \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 108, N. 10 et T. 114, N. 29.
- 15) $\int \frac{1+x}{1-x} \frac{dx}{x} = \frac{1}{4} \pi^2$ (VIII, 265).
- 16) $\int \frac{px+q}{qx+p} \frac{dx}{(1+x)^2} = \frac{1}{p-q} \left[(p+q) \log \frac{p+q}{2} - p \log p - q \log q \right]$ V. T. 114, N. 22.
- 17) $\int \frac{1+x}{1-x} \frac{dx}{1+x^2} = \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 114, N. 3, 17.
- 18) $\int \frac{1+x^2}{1+x} \frac{dx}{1+x^2} = \frac{3\pi}{8} \log 2 + \sum_{n=0}^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2}$ V. T. 114, N. 3, 24.

$$19) \int_0^1 \frac{1+x^2}{1-x^2} \frac{dx}{1+x^2} = \frac{3\pi}{8} \text{ l2 (VIII, 465).}$$

$$20) \int_0^1 \frac{1+x^2}{1-x^2} \frac{dx}{1+x^2} = \frac{\pi}{4} \text{ l2 (VIII, 465).}$$

$$21) \int_0^1 \frac{(1+x)(1-x^2)}{1+x^2} \frac{dx}{1+x^2} = -\frac{\pi}{8} \text{ l2 (VIII, 465).}$$

$$22) \int_0^1 \frac{1-x^2 \operatorname{Coth} p^2 \lambda}{1+x^2 \operatorname{Coth} p^2 \lambda} \frac{dx}{1-(1-x^2) \operatorname{Cosh} p^2 \lambda} = \frac{2 \lambda \operatorname{L} \operatorname{Sin} h p \lambda}{\operatorname{Sin} h p \lambda \cdot \operatorname{Cosh} p \lambda} \text{ V. T. 318, N. 7.}$$

$$23) \int_0^1 \frac{1+2x \cos \lambda + x^2}{(1+x)^2} \frac{dx}{x} = -\frac{1}{2} \lambda^2 \text{ (VIII, 584).}$$

$$24) \int_0^1 \frac{1+2x \cos \lambda + x^2}{(1+x)^2} (x^p + x^{-p}) \frac{dx}{x} = \frac{2\pi}{p} \operatorname{Cosec} p \pi \cdot (\cos p \lambda - 1) \text{ (VIII, 584).}$$

$$25) \int_0^1 \frac{(1-px)(1+px^2)}{(1-px^2)^2} \frac{dx}{1+px^2} = \frac{1}{2\sqrt{p}} \operatorname{Arctg}(\sqrt{p}) \cdot \operatorname{l}(1+p) \text{ (VIII, 465*)}.}$$

$$26) \int_0^1 \frac{(1-p^2 x^2)(1+px^2)}{(1-px^2)^2} \frac{dx}{1+px^2} = \frac{1}{\sqrt{p}} \operatorname{Arctg}(\sqrt{p}) \cdot \operatorname{l}(1+p) \text{ (VIII, 465*)}.}$$

$$27) \int_0^1 \frac{(p-x)(p+x^2)}{(p-x^2)^2} \frac{dx}{p+x^2} = \frac{1}{2\sqrt{p}} \operatorname{Arccot}(\sqrt{p}) \cdot \operatorname{l} \frac{1+p}{p} \text{ V. T. 115, N. 25.}$$

$$28) \int_0^1 \frac{(p^2-x^2)(p+x^2)}{(p-x^2)^2} \frac{dx}{p+x^2} = \frac{1}{\sqrt{p}} \operatorname{Arccot}(\sqrt{p}) \cdot \operatorname{l}(1+p) \text{ V. T. 115, N. 26.}$$

$$29) \int_0^1 \frac{1+p\sqrt{1-x^2}}{1-p\sqrt{1-x^2}} \frac{dx}{1-x^2} = \pi \operatorname{Arcsin} p \text{ (VIII, 582).}$$

$$30) \int_0^1 \frac{1+\cos \mu \cdot \sqrt{1-x^2}}{1-\cos \mu \cdot \sqrt{1-x^2}} \frac{dx}{x^2 + \operatorname{Tg}^2 \lambda} = \pi \operatorname{Cot} \lambda \cdot \operatorname{l} \left[\left\{ \cos \frac{1}{2}(\lambda - \mu) \right\} \cdot \left\{ \operatorname{Cosec} \frac{1}{2}(\lambda + \mu) \right\} \right]$$

V. T. 318, N. 13.

$$31) \int_0^1 \left\{ \frac{x + \sqrt{1-x^2}}{x - \sqrt{1-x^2}} \right\}^2 \frac{x dx}{1-x^2} = \frac{1}{2} \pi^2 \text{ V. T. 315, N. 15.}$$

$$32) \int_0^1 \frac{\sqrt{1-p^2 x^2} - x \sqrt{1-p^2}}{1-x} \frac{dx}{x} = \frac{1}{2} (\operatorname{Arcsin} p)^2 \text{ Winckler, Sitz. Ber. Wien. B. 43, 315.}$$

$$33) \int_0^1 \sqrt{\frac{1}{x}} \frac{dx}{1+x^2} = \frac{1}{2} \sqrt{\pi} \cdot \sum_0^{\infty} \frac{(-1)^n}{\sqrt{2n+1}} \text{ (IV, 259*)}.}$$

F. Alg. rat. fract.;

Log. en num. à deux facteurs.

TABLE 116.

Lim. 0 et 1.

$$1) \int (lx)^{2a} \cdot l(1+x) \frac{dx}{x} = \frac{2^{2a+1} - 1}{(2a+1)(2a+2)} \pi^{2a+1} B_{2a+1} \text{ (VIII, 592).}$$

$$2) \int (lx)^{2a} \cdot l(1-x) \frac{dx}{x} = -\frac{2^{2a}}{(a+1)(2a+1)} \pi^{2a+1} B_{2a+1} \text{ (VIII, 592).}$$

$$3) \int (lx)^{a-1} \cdot l(1+x) \frac{dx}{x} = 1^{a-1/1} \sum_0^{\infty} \frac{(-1)^{n+a-1}}{(1+n)^{a+1}} \text{ V. T. 110, N. 3.}$$

$$4) \int (lx)^{a-1} \cdot l(1-x) \frac{dx}{x} = (-1)^a 1^{a-1/1} \sum_0^{\infty} \frac{1}{(n+1)^{a+1}} \text{ V. T. 110, N. 6.}$$

$$5) \int (lx)^{2a} \cdot l(1-x^2) \frac{dx}{x} = -\frac{1}{(2a+1)(2a+2)} \pi^{2a+1} B_{2a+1} \text{ V. T. 116, N. 1, 2.}$$

$$6) \int (lx)^{a-1} \cdot l(1-x^2) \frac{dx}{x} = \frac{(-1)^a}{2^a} 1^{a-1/1} \sum_0^{\infty} \frac{1}{(n+1)^{a+1}} \text{ V. T. 110, N. 3, 6.}$$

$$7) \int (lx)^p \cdot l(1-qx^r) \frac{dx}{x} = \Gamma(p+1) \left(\frac{-1}{r}\right)^{p+1} \sum_1^{\infty} \frac{q^n}{n^{p+1}} \text{ V. T. 110, N. 8.}$$

$$8) \int (lx)^r \cdot l(1-2px \cos \lambda + p^2 x^2) \frac{dx}{x} = (-1)^r 2 \Gamma(r) \sum_1^{\infty} \frac{p^n \cos n\lambda}{n^{r+1}} \text{ V. T. 113, N. 11.}$$

F. Alg. irrat. ent.;

Log. en num.

TABLE 117.

Lim. 0 et 1.

$$1) \int lx \cdot dx \sqrt{1-x^2} = -\frac{1}{4} \pi \left(\frac{1}{2} + l2\right) \text{ (VIII, 685).}$$

$$2) \int lx \cdot x dx \sqrt{1-x^2} = \frac{1}{3} \left(l2 - \frac{4}{3}\right) \text{ (VIII, 685).}$$

$$3) \int lx \cdot dx \sqrt{1-x^2}^{2a-1} = -\frac{1^{a/2}}{2^{a+1} 1^{a/1}} \pi \{A + Z'(a+1) + 2l2\} \text{ (IV, 227).}$$

$$4) \int lx \cdot x^{2a} dx \sqrt{1-x^2} = -\frac{3^{a-1/2}}{2^{a+1/1}} \frac{\pi}{2} \left\{ \frac{1}{2a+2} + l2 + \sum_1^{2a} \frac{(-1)^n}{n} \right\} \text{ (VIII, 685).}$$

$$5) \int lx \cdot x^{2a-1} dx \sqrt{1-x^2} = -\frac{2^{a-1/2}}{1^{a+1/2}} \left\{ \frac{1}{2a+1} - l2 + \sum_1^{2a-1} \frac{(-1)^{n-1}}{n} \right\} \text{ (VIII, 685).}$$

$$6) \int l(1+px^2) \cdot dx \sqrt{1-x^2} = \frac{1}{2} \pi \left\{ l \frac{1+\sqrt{1+p}}{2} + \frac{1}{2} \frac{1-\sqrt{1+p}}{1+\sqrt{1+p}} \right\} \text{ (VIII, 358).}$$

$$7) \int l(1+p-px^2) \cdot dx \sqrt{1-x^2} = \frac{1}{2} \pi \left\{ l \frac{1+\sqrt{1+p}}{2} - \frac{1}{2} \frac{1-\sqrt{1+p}}{1+\sqrt{1+p}} \right\} \text{ V. T. 309, N. 15.}$$

F. Alg. irrat. ent.;
Log. en num.

TABLE 117, suite.

Lim. 0 et 1.

$$8) \int l(1-p^2 x^2) \cdot x dx \sqrt{1-p^2 x^2} = \frac{1}{9p^3} [\{2-3l(1-p^2)\} \sqrt{1-p^2} - 2] \text{ V. T. 324, N. 19.}$$

$$9) \int l(1-p^2 x^2) \cdot dx \sqrt{(1-x^2)(1-p^2 x^2)} = \frac{1}{9p^3} [\{(2+7p^2-3p^4) - \frac{3}{2}(1-p^2)l(1-p^2)\} \\ F'(p) + \{2(1+4p^2) + 3(2-p^2)l(1-p^2)\} E'(p)] \text{ V. T. 324, N. 21.}$$

Dans 8) et 9) on a $p^2 < 1$.

F. Alg. irrat. fract.;

Log. en num. $(lx)^a$.

TABLE 118.

Lim. 0 et 1.

$$\left. \begin{aligned} 1) \int lx \frac{x^a}{1-x} \frac{dx}{\sqrt{x}} &= -\frac{1}{2} \pi^2 + 4 \sum_1^a \frac{1}{(2n-1)^2} \\ 2) \int lx \frac{1-x^{a+1}}{(1-x)^2} \frac{dx}{\sqrt{x}} &= -\frac{1}{2} (a+1) \pi^2 + 4 \sum_1^a \frac{a-n+1}{(2n-1)^2} \end{aligned} \right\} \text{Oettinger, Gr. 39, 425.}$$

$$3) \int lx \frac{dx}{\sqrt{1-x^2}} = -\frac{1}{2} \pi l2 \text{ (VIII, 547).}$$

$$4) \int lx \frac{x dx}{\sqrt{1-x^2}} = l2 - 1 \text{ (VIII, 685).}$$

$$5) \int lx \cdot x^{a/2} \frac{dx}{\sqrt{1-x^2}} = -\frac{3^{a-1/2}}{2^{a/2}} \frac{\pi}{2} \left\{ l2 + \sum_1^{a/2} \frac{(-1)^n}{n} \right\} \text{ (VIII, 684).}$$

$$6) \int lx \cdot x^{a-1} \frac{dx}{\sqrt{1-x^2}} = \frac{2^{a-1/2}}{1^{a/2}} \left\{ l2 + \sum_1^{a-1} \frac{(-1)^n}{n} \right\} \text{ (VIII, 684).}$$

$$7) \int lx \frac{dx}{\sqrt{1-x^2}} = -\frac{\pi}{3\sqrt{3}} \left(l3 + \frac{\pi}{3\sqrt{3}} \right) \text{ (IV, 228).}$$

$$8) \int lx \frac{x dx}{\sqrt{1-x^2}} = \frac{\pi}{3\sqrt{3}} \left(\frac{\pi}{3\sqrt{3}} - l3 \right) \text{ (IV, 228).}$$

$$9) \int lx \frac{dx}{\sqrt{(1-x^2)(1-p^2 x^2)}} = -\frac{1}{2} lp \cdot F'(p) - \frac{1}{4} \pi F' \{ \sqrt{1-p^2} \} [p^2 < 1] \text{ V. T. 322, N. 3.}$$

$$10) \int lx \frac{1}{(1+p)^2 - 4px^2} \frac{dx}{\sqrt{1-x^2}} = \frac{\pi}{2(1+p)^2} l \frac{1+p}{2} [p^2 < 1], = \frac{\pi}{2(p^2-1)} l \frac{1+p}{2p} [p^2 > 1]$$

V. T. 321, N. 3.

$$11) \int lx \frac{1-p^2+2px^2}{(1-p)^2+4px^2} \frac{dx}{\sqrt{1-x^2}} = \frac{1}{4} \pi l \frac{1-p}{4} [p^2 < 1], = \frac{1}{4} \pi l \frac{p-1}{4p} [p^2 > 1]$$

V. T. 321, N. 1, 2.

$$12) \int lx \frac{x^{a-1} dx}{\sqrt{1-x^{b/c}}} = -\sum_0^a \frac{(b-c)^{a/b}}{b^{a/b}} \frac{1}{(a+bn)^2} \text{ (IV, 228).}$$

F. Alg. irrat. fract.;
Log. en num. $(lx)^a$.

TABLE 118, suite.

Lim. 0 et 1.

$$13) \int (lx)^2 \frac{dx}{\sqrt{1-x^2}} = \frac{1}{2} \pi \left\{ (l2)^2 + \frac{1}{12} \pi^2 \right\} \text{ (IV, 229).}$$

$$14) \int (lx)^h \frac{x^{q-1} dx}{\sqrt{1-x^{b^{q-c}}}} = (-1)^h 1^{h/1} \sum_0^{\infty} \frac{(b-c)^{n/b}}{b^{n/b}} \frac{1}{(q+bn)^{h+1}} \text{ (IV, 229).}$$

$$15) \int (lx)^2 \frac{x^a}{1-x} \frac{dx}{\sqrt{x}} = 16 \sum_a^{\infty} \frac{1}{(2n-1)^2} \text{ Oettinger, Gr. 39, 425.}$$

F. Alg. irrat. fract.;

Log. en num. $l(1-p^2 x^2) [p^2 < 1]$.

TABLE 119.

Lim. 0 et 1.

$$1) \int l(1-p^2 x^2) \frac{dx}{\sqrt{1-x^2}} = \pi l \frac{1+\sqrt{1-p^2}}{2} [p^2 < 1], = -\pi l 2p [p^2 > 1] \text{ (VIII, 550*)}.$$

$$2) \int l(1-p^2 x^2) \frac{x^2 dx}{\sqrt{1-x^2}} = \frac{1}{2} \pi \left\{ l \frac{1+\sqrt{1-p^2}}{2} - \frac{1}{2} \frac{1-\sqrt{1-p^2}}{1+\sqrt{1-p^2}} \right\} \text{ V. T. 309, N. 11.}$$

$$3) \int l(1-p^2 x^2) \cdot dx \sqrt{\frac{1-p^2 x^2}{1-x^2}} = (2-p^2) F'(p) - \left\{ 2 - \frac{1}{2} l(1-p^2) \right\} E'(p) \text{ (VIII, 549).}$$

$$4) \int l(1-p^2 x^2) \cdot x^2 dx \sqrt{\frac{1-p^2 x^2}{1-x^2}} = \frac{1}{9p^2} \left[\left\{ -(2-11p^2+6p^4) + \frac{3}{2} (1-p^2) l(1-p^2) \right\} F'(p) + \left\{ 2(1-5p^2) - \frac{3}{2} (1-2p^2) l(1-p^2) \right\} E'(p) \right] \text{ V. T. 324, N. 20.}$$

$$5) \int l(1-p^2 x^2) \cdot dx \sqrt{\frac{(1-p^2 x^2)^2}{1-x^2}} = \frac{1}{9} \left[\left\{ 2(10-10p^2+3p^4) - \frac{3}{2} (1-p^2) l(1-p^2) \right\} F'(p) - (2-p^2) \left\{ 10-3l(1-p^2) \right\} E'(p) \right] \text{ V. T. 324, N. 22.}$$

$$6) \int l(1-p^2 x^2) \frac{x dx}{\sqrt{1-p^2 x^2}} = \frac{1}{p^2} \left[\left\{ 2 - l(1-p^2) \right\} \sqrt{1-p^2} - 2 \right] \text{ V. T. 323, N. 2.}$$

$$7) \int l(1-p^2 x^2) \cdot dx \sqrt{\frac{1-x^2}{1-p^2 x^2}} = \frac{1}{p^2} \left[\left\{ (2-p^2) - \frac{1}{2} (1-p^2) l(1-p^2) \right\} F'(p) - \left\{ 2 - \frac{1}{2} l(1-p^2) \right\} E'(p) \right] \text{ (VIII, 549).}$$

$$8) \int l(1-p^2 x^2) \cdot x^2 dx \sqrt{\frac{1-x^2}{1-p^2 x^2}} = \frac{1}{9p^2} \left[\left\{ (16-16p^2+3p^4) + \frac{3}{2} (1-p^2) l(1-p^2) \right\} F'(p) + \left\{ 2(1-5p^2) - \frac{3}{2} (1-2p^2) l(1-p^2) \right\} E'(p) \right] \text{ V. T. 323, N. 4.}$$

$$9) \int \ell(1-p^2x^2).dx \sqrt{\frac{1-x^2}{(1-p^2x^2)^3}} = \frac{1}{p^2} \left[\left\{ (2-p^2) + \frac{1}{2}\ell(1-p^2) \right\} F'(p) - \left\{ 2 + \frac{1}{2}\ell(1-p^2) \right\} E'(p) \right]$$

V. T. 323, N. 16.

$$10) \int \ell(1-p^2x^2).dx \sqrt{\frac{(1-x^2)^3}{1-p^2x^2}} = \frac{1}{9p^4} \left[-\left\{ 2(8-17p^2+6p^4) + \frac{3}{2}(1+3p^2)(1-p^2)\ell(1-p^2) \right\} \right.$$

$$\left. F'(p) + \left\{ -2(1+4p^2) + \frac{3}{2}(1+p^2)\ell(1-p^2) \right\} E'(p) \right] \text{ V. T. 323, N. 7.}$$

$$11) \int \ell(1-p^2x^2).x^2 dx \sqrt{\frac{1-x^2}{(1-p^2x^2)^3}} = \frac{1}{p^4} \ell(1-p^2) \cdot \left[\frac{1}{2}(2-p^2)F'(p) - E'(p) \right] \text{ V. T. 323, N. 11.}$$

$$12) \int \ell(1-p^2x^2).x^4 dx \sqrt{\frac{1-x^2}{(1-p^2x^2)^3}} = \frac{1}{9p^6} \left[\left\{ -(16-16p^2+3p^4) + \frac{3}{2}(8-5p^2)\ell(1-p^2) \right\} \right.$$

$$\left. F'(p) + \left\{ 8(2-p^2) - \frac{3}{2}(8-p^2)\ell(1-p^2) \right\} E'(p) \right] \text{ V. T. 323, N. 14.}$$

$$13) \int \ell(1-p^2x^2).dx \sqrt{\frac{(1-x^2)^3}{(1-p^2x^2)^3}} = \frac{1}{p^4} \left[\left\{ p^2(2-p^2) - (1-p^2)\ell(1-p^2) \right\} F'(p) + \right.$$

$$\left. + \left\{ -2p^2 + \frac{1}{2}(2-p^2)\ell(1-p^2) \right\} E'(p) \right] \text{ V. T. 323, N. 17.}$$

$$14) \int \ell(1-p^2x^2).x^2 dx \sqrt{\frac{(1-x^2)^3}{(1-p^2x^2)^3}} = \frac{1}{9p^6} \left[\left\{ (16-16p^2+3p^4) - \frac{3}{2}(8-3p^2)(1-p^2)\ell(1-p^2) \right\} \right.$$

$$\left. F'(p) + 4(2-p^2) \left\{ -2 + 3\ell(1-p^2) \right\} E'(p) \right] \text{ V. T. 323, N. 12.}$$

$$15) \int \ell(1-p^2x^2).dx \sqrt{\frac{(1-x^2)^5}{(1-p^2x^2)^3}} = \frac{1}{9p^6} \left[\left\{ -(16-16p^2-15p^4+9p^6) + \frac{3}{2}(8-9p^2)(1-p^2) \right. \right.$$

$$\left. \ell(1-p^2) \right\} F'(p) + \left\{ 2(8-4p^2-9p^4) - \frac{3}{2}(8-3p^2)(1-p^2)\ell(1-p^2) \right\} E'(p) \right]$$

V. T. 323, N. 18.

$$16) \int \ell(1-p^2x^2).dx \sqrt{\frac{1-x^2}{(1-p^2x^2)^5}} = \frac{1}{9p^2(1-p^2)} \left[\left\{ (2-11p^2+6p^4) + \frac{3}{2}(1-p^2)\ell(1-p^2) \right\} \right.$$

$$\left. F'(p) - \left\{ 2(1-5p^2) + \frac{3}{2}(1-2p^2)\ell(1-p^2) \right\} E'(p) \right] \text{ V. T. 324, N. 12.}$$

$$17) \int \ell(1-p^2x^2).x^2 dx \sqrt{\frac{1-x^2}{(1-p^2x^2)^5}} = \frac{1}{9p^4(1-p^2)} \left[\left\{ -(16-16p^2+3p^4) + 3(1-p^2)\ell(1-p^2) \right\} \right.$$

$$\left. F'(p) + (2-p^2) \left\{ 8 + \frac{3}{2}\ell(1-p^2) \right\} E'(p) \right] \text{ V. T. 324, N. 3.}$$

$$18) \int \ell(1 - p^2 x^2) \cdot dx \sqrt{\frac{(1 - x^2)^2}{(1 - p^2 x^2)^2}} = \frac{1}{9p^4} \left[\left\{ 2(8 + p^2 - 3p^4) + \frac{3}{2}(2 + p^2) \ell(1 - p^2) \right\} F'(p) - \right. \\ \left. - \{ 2(8 + 5p^2) + 3(1 + p^2) \ell(1 - p^2) \} E'(p) \right] \text{ V. T. 324, N. 13.}$$

$$19) \int \ell(1 - p^2 x^2) \cdot x^4 dx \sqrt{\frac{1 - x^2}{(1 - p^2 x^2)^2}} = \frac{1}{9p^4(1 - p^2)} \left[- \left\{ (16 - 16p^2 + 3p^4) + \frac{3}{2}(8 - 3p^2) \right. \right. \\ \left. \left. (1 - p^2) \ell(1 - p^2) \right\} F'(p) + \left\{ 8(2 - p^2) + \frac{3}{2}(8 - 7p^2) \ell(1 - p^2) \right\} E'(p) \right] \text{ V. T. 324, N. 7.}$$

$$20) \int \ell(1 - p^2 x^2) \cdot x^2 dx \sqrt{\frac{(1 - x^2)^2}{(1 - p^2 x^2)^2}} = \frac{1}{9p^4} \left[\left\{ (16 - 16p^2 + 3p^4) + \frac{3}{2}(8 - p^2) \ell(1 - p^2) \right\} \right. \\ \left. F'(p) - 4(2 - p^2) \{ 2 - 3 \ell(1 - p^2) \} E'(p) \right] \text{ V. T. 324, N. 4.}$$

$$21) \int \ell(1 - p^2 x^2) \cdot dx \sqrt{\left(\frac{1 - x^2}{1 - p^2 x^2} \right)^2} = \frac{1}{9p^4} \left[- \left\{ (16 - 32p^2 + p^4 + 6p^4) + \frac{3}{2}(8 - 3p^2 - p^4) \right. \right. \\ \left. \left. \ell(1 - p^2) \right\} F'(p) + \{ 2(8 - 12p^2 - 5p^4) - 3(8 - 5p^2 - p^4) \ell(1 - p^2) \} E'(p) \right] \\ \text{V. T. 324, N. 14.}$$

$$22) \int \ell(1 - p^2 x^2) \cdot x^6 dx \sqrt{\frac{1 - x^2}{(1 - p^2 x^2)^2}} = \frac{1}{9p^4(1 - p^2)} \left[\left\{ -p^2(16 - 16p^2 + 3p^4) + 12(2 + p^2) \right. \right. \\ \left. \left. (1 - p^2) \ell(1 - p^2) \right\} F'(p) + \left\{ 8p^2(2 - p^2) + \frac{3}{2}(16 - 16p^2 + p^4) \ell(1 - p^2) \right\} E'(p) \right] \\ \text{V. T. 324, N. 10.}$$

$$23) \int \ell(1 - p^2 x^2) \cdot x^4 dx \sqrt{\frac{(1 - x^2)^2}{(1 - p^2 x^2)^2}} = \frac{1}{3p^4} \ell(1 - p^2) \cdot \left[- \frac{1}{2}(16 + 16p^2 - 3p^4) F'(p) - \right. \\ \left. - 4(2 - p^2) E'(p) \right] \text{ V. T. 324, N. 8.}$$

$$24) \int \ell(1 - p^2 x^2) \cdot x^2 dx \sqrt{\left(\frac{1 - x^2}{1 - p^2 x^2} \right)^2} = \frac{1}{9p^4} \left[\{ p^2(16 - 16p^2 + 3p^4) + 6(4 + 6p^2 - p^4) \ell(1 - p^2) \} \right. \\ \left. F'(p) - 4(2 - p^2) \{ 2p^2 - 3(1 + p^2) \ell(1 - p^2) \} E'(p) \right] \text{ V. T. 324, N. 5.}$$

$$25) \int \ell(1 - p^2 x^2) \cdot dx \sqrt{\frac{(1 - p^2)^2}{(1 - p^2 x^2)^2}} = \frac{1}{9p^4} \left[\left\{ -2p^2(16 - 8p^2 + 2p^4 + 3p^4) - \frac{3}{2}(16 - p^4)(1 + p^2) \right. \right. \\ \left. \left. \ell(1 - p^2) \right\} F'(p) + \{ 2p^2(16 - 14p^2 - 5p^4) - 3(8 + 4p^2 - 9p^4 - p^4) \ell(1 - p^2) \} E'(p) \right] \\ \text{V. T. 324, N. 15.}$$

F. Alg. irrat. fract.;

Log. en num. d' autre fonct. bin. ent. $[p^2 < 1]$.

TABLE 120, suite.

Lim. 0 et 1.

$$8) \int l(1+px^2) \frac{dx}{\sqrt{(1-x^2)(1-p^2x^2)}} = \frac{1}{2} l \frac{2+2p}{\sqrt{p}} F'(p) - \frac{1}{8} \pi F\{\sqrt{1-p^2}\} \quad \text{V. T. 325, N. 4.}$$

$$9) \int l(1+x^2 \cot^2 \lambda) \frac{dx}{\sqrt{(1-x^2)(1-p^2x^2)}} = \pi F\{\sqrt{1-p^2}, \lambda\} - 2 F'(p) \cdot \tau\{\sqrt{1-p^2}, \lambda\} - \\ - 2 F'(p) \cdot l \sin \lambda - \frac{1}{2} \pi F\{\sqrt{1-p^2}\} - F'(p) \cdot lp - \{E(p) - F'(p)\} [F\{\sqrt{1-p^2}, \lambda\}]^2 \\ \text{V. T. 325, N. 7.}$$

$$10) \int l(1-x^2) \frac{dx}{\sqrt{1-x^2}} = -\pi l 2 \quad (\text{VIII, 547}).$$

$$11) \int l(1-x^2) \frac{dx}{x \sqrt{1-x^2}} = -\frac{1}{4} \pi^2 \quad \text{V. T. 120, N. 2.}$$

$$12) \int l(1-x^2) \frac{dx}{\sqrt{(1-x^2)(1-p^2x^2)}} = \frac{1}{2} l \frac{1-p^2}{p^2} F'(p) - \frac{1}{2} \pi F\{\sqrt{1-p^2}\} \quad \text{V. T. 322, N. 9.}$$

$$13) \int l(1-p^2x^2 \sin^2 \lambda) \frac{dx}{\sqrt{(1-x^2)(1-p^2x^2)}} = E'(p) \cdot \{F(p, \lambda)\}^2 - 2 F'(p) \cdot \tau(p, \lambda) \quad \text{V. T. 325, N. 9.}$$

$$14) \int l(1-px^2) \frac{dx}{\sqrt{(1-p^2x^2)(1-p^2x^2)}} = \frac{1}{2} l \frac{2-2p}{\sqrt{p}} F'(p) - \frac{1}{8} \pi F\{\sqrt{1-p^2}\} \quad \text{V. T. 325, N. 5.}$$

$$15) \int l(p^2-x^2)^2 \frac{dx}{\sqrt{1-x^2}} = -2\pi l 2 [p^2 < 1], = 2\pi l \frac{p + \sqrt{p^2-1}}{2} [p^2 > 1] \quad (\text{VIII, 550*}).$$

$$16) \int l(1-p^2x^4) \frac{dx}{\sqrt{1-x^2}} = \pi l \frac{1 + \sqrt{1-p} + \sqrt{1+p} + \sqrt{1-p^2}}{4} \quad \text{V. T. 120, N. 6.}$$

$$17) \int l(1-p^2x^4) \frac{dx}{\sqrt{(1-x^2)(1-p^2x^2)}} = \frac{1}{2} l \frac{4(1-p^2)}{p^2} F'(p) - \frac{1}{4} \pi F\{\sqrt{1-p^2}\} \quad \text{V. T. 325, N. 10.}$$

F. Alg. irrat. fract.;

Log. en num. d' autre fonct. ent. $[p^2 < 1]$.

TABLE 121.

Lim. 0 et 1.

$$1) \int l(1+p^2+2px) \frac{dx}{\sqrt{1-x^2}} = \sum_{n=0}^{\infty} \frac{1}{2n+1} \frac{2^{n/2}}{3^{n/2}} \left(\frac{2p}{1+p^2}\right)^{2n+1} \quad \text{V. T. 308, N. 24.}$$

$$2) \int l(1-x^2+px^2) \frac{dx}{\sqrt{(1-x^2)(1-p^2x^2)}} = \frac{1}{4} l(1-p^2) F'(p) + \frac{1}{2} F\{\sqrt{1-p^2}\} \cdot \\ l \left[\frac{2\sqrt{1-p^2}}{p^2} \{1 - \sqrt{1-p^2}\} \right] \quad \text{Bronwin, Math. 2, 297.}$$

$$3) \int l(1+p-px^2) \frac{x^2 dx}{\sqrt{1-x^2}} = \frac{1}{2} \pi \left\{ l \frac{1+\sqrt{1+p}}{2} + \frac{1}{2} \frac{1-\sqrt{1+p}}{1+\sqrt{1+p}} \right\} \quad \text{V. T. 309, N. 15.}$$

F. Alg. irrat. fract.;

Log. en num. d'autre fonct. ent. $[p^2 < 1]$. TABLE 121, suite.

Lim. 0 et 1.

$$4) \int \ell \{1 - (\cos^2 \lambda + p^2 \sin^2 \lambda) x^2\} \frac{dx}{\sqrt{(1-x^2)(1-p^2 x^2)}} = \pi F\{\sqrt{1-p^2}, \lambda\} - \\ - 2F'(p) \cdot r\{\sqrt{1-p^2}, \lambda\} + \frac{1}{2} F'(p) \cdot \ell \frac{1-p^2}{p^2} - \frac{1}{2} \pi F'\{\sqrt{1-p^2}\} - \\ - \{E'(p) - F'(p)\} [\ell\{\sqrt{1-p^2}, \lambda\}]^2 \quad \text{V. T. 325, N. 8.}$$

$$5) \int \ell \{1 - x^2 + x^2 \sqrt{1-p^2}\} \frac{dx}{\sqrt{(1-x^2)(1-p^2 x^2)}} = \frac{1}{2} \ell \frac{2\sqrt{1-p^2}}{1+\sqrt{1-p^2}} \cdot F'(p) \quad \text{V. T. 325, N. 6.}$$

$$6) \int \ell \{1 + \sqrt{1-p^2} x^2\} \frac{dx}{\sqrt{(1-x^2)(1-p^2 x^2)}} = \frac{1}{2} \ell p \cdot F'(p) + \frac{\pi}{4} F'\{\sqrt{1-p^2}\} \quad \text{V. T. 325, N. 3.}$$

$$7) \int \ell \{1 - \sqrt{1-p^2} x^2\} \frac{dx}{\sqrt{(1-x^2)(1-p^2 x^2)}} = \frac{1}{2} \ell p \cdot F'(p) - \frac{3}{4} \pi F'\{\sqrt{1-p^2}\}$$

$$8) \int \ell \{\sqrt{1+px} + \sqrt{1-px}\} \frac{dx}{\sqrt{(1-x^2)(1-p^2 x^2)}} = \frac{1}{4} \ell(4p) \cdot F'(p) + \frac{1}{8} \pi F'\{\sqrt{1-p^2}\}$$

$$9) \int \ell \{\sqrt{1-px} - \sqrt{1-px}\} \frac{dx}{\sqrt{(1-x^2)(1-p^2 x^2)}} = \frac{1}{4} \ell(4p) \cdot F'(p) + \frac{3}{8} \pi F'\{\sqrt{1-p^2}\}$$

$$10) \int \ell \{1 + p^2 - 2p^2 x^2 + 2p \sqrt{(1-x^2)(1-p^2 x^2)}\} \frac{dx}{\sqrt{1-p^2 x^2}} = \frac{1}{p} \left\{ \text{Arcsin } p - \frac{1}{2} \pi \ell(1-p^2) \right\}$$

$$11) \int \ell \{1 + p^2 - 2p^2 x^2 - 2p \sqrt{(1-x^2)(1-p^2 x^2)}\} \frac{dx}{\sqrt{1-p^2 x^2}} = \frac{1}{p} \left\{ \text{Arcsin } p + \frac{1}{2} \pi \ell(1-p^2) \right\}$$

Sur 7) à 11), voyez Bronwin, Math. 2, 297.

F. Alg. irrat. fract.;

Log. en num. de fonct. fract. TABLE 122.

Lim. 0 et 1.

$$1) \int \ell \left(\frac{1+x}{1-x} \right) \frac{dx}{x \sqrt{1-x^2}} = \frac{1}{2} \pi^2 \quad (\text{VIII, 546}).$$

$$2) \int \ell \left(\frac{1+qx}{1-qx} \right) \frac{dx}{x \sqrt{1-x^2}} = \pi \text{Arcsin } q \quad (\text{VIII, 550*}).$$

$$3) \int \ell \left(\frac{1+x \cos \mu}{1-x \cos \mu} \right) \frac{1}{1+x \cos \lambda} \frac{dx}{\sqrt{1-x^2}} = \frac{2\pi}{\sin \lambda} \ell \frac{\cos \left\{ \frac{1}{2} (\pi - 2\lambda) \right\}}{\cos \left\{ \frac{1}{2} (\lambda - \mu) \right\}} \quad \text{V. T. 318, N. 8.}$$

$$4) \int \ell \left(\frac{1+x \cos \mu}{1-x \cos \mu} \right) \frac{1}{1-x^2 \cos^2 \lambda} \frac{dx}{\sqrt{1-x^2}} = \frac{\pi}{\sin \lambda} \ell \frac{1 + \sin \lambda}{\sin \lambda + \sin \mu} \quad \text{V. T. 318, N. 12.}$$

$$5) \int \ell \left(\frac{1+x \cos \mu}{1-x \cos \mu} \right) \frac{x}{1-x^2 \cos^2 \lambda} \frac{dx}{\sqrt{1-x^2}} = \frac{2\pi}{\sin 2\lambda} \ell \frac{\cos \left\{ \frac{1}{2} (\mu - \lambda) \right\}}{\sin \left\{ \frac{1}{2} (\mu + \lambda) \right\}} \quad \text{V. T. 318, N. 5.}$$

F. Alg. irrat. fract.;

Log. en num. de fonct. fract.

TABLE 122, suite.

Lim. 0 et 1.

$$6) \int l \left(\frac{1+x \operatorname{Cosh} p \lambda}{1-x \operatorname{Cosh} p \lambda} \right) \frac{x}{1-x^2 \operatorname{Cosh}^2 p \lambda} \frac{dx}{\sqrt{1-x^2}} = -\frac{\pi}{\operatorname{Sh} p \lambda \cdot \operatorname{Cosh} p \lambda} l \operatorname{Sh} p \lambda \text{ V. T. 318, N. 11.}$$

$$7) \int l \left(\frac{1+x \operatorname{Cosh} p \mu}{1-x \operatorname{Cosh} p \mu} \right) \frac{x}{1-x^2 \operatorname{Cos}^2 \lambda} \frac{dx}{\sqrt{1-x^2}} = \frac{2\pi}{\operatorname{Sin} 2\lambda} l \left[\operatorname{Cot} h p \left\{ \frac{1}{2} \operatorname{Arccosh} p \left(\frac{\operatorname{Cosh} p \mu}{\operatorname{Cos} \lambda} \right) \right\} \cdot \operatorname{Tang} h p \left\{ \frac{1}{2} \operatorname{Arccosh} p \left(\frac{\operatorname{Tg} \lambda}{\operatorname{Tang} h p \mu} \right) \right\} \right] \text{ V. T. 318, N. 14.}$$

$$8) \int l \left(\frac{1+px}{1-px} \right) \frac{x}{1-qx^2} \frac{dx}{\sqrt{1-x^2}} = \frac{\pi}{\sqrt{q(1-q)}} l \frac{p\sqrt{q} + \{1-\sqrt{1-q}\} \{1-\sqrt{1-p^2}\}}{p\sqrt{q} - \{1-\sqrt{1-q}\} \{1-\sqrt{1-p^2}\}} \text{ (IV, 232).}$$

$$9) \int l \left(\frac{1+x}{1-x} \right) \frac{x}{1-\operatorname{Cos}^2 \lambda \cdot \operatorname{Cos}^2 \mu - x^2 \operatorname{Sin}^2 \mu} \frac{dx}{\sqrt{x^2 - \operatorname{Cos}^2 \lambda}} = \frac{\pi}{\operatorname{Sin} \lambda \cdot \operatorname{Sin} \mu} l \frac{\operatorname{Sin} \mu + \sqrt{1-\operatorname{Cos}^2 \lambda \cdot \operatorname{Cos}^2 \mu}}{\operatorname{Sin} \mu \cdot (1+\operatorname{Sin} \lambda)} \text{ V. T. 322, N. 12.}$$

$$10) \int \left\{ l \left(\frac{1+x}{1-x} \right) - 2x \right\} \frac{dx}{x^2 \sqrt{1-x^2}} = \frac{1}{4} \pi^2 \text{ V. T. 315, N. 8.}$$

$$11) \int l \left(\frac{\operatorname{Cos}^2 \lambda + x^2 \operatorname{Sin}^2 \lambda}{\operatorname{Cos}^2 \mu + x^2 \operatorname{Sin}^2 \mu} \right) \frac{dx}{\sqrt{1-x^2}} = 2\pi l \left(\operatorname{Cos} \frac{1}{2} \lambda \cdot \operatorname{Sec} \frac{1}{2} \mu \right) \text{ (VIII, 291).}$$

$$12) \int l \left(\frac{1+qx^2}{1-qx^2} \right) \frac{dx}{\sqrt{1-x^2}} = \pi l \frac{1+\sqrt{1+q}}{1+\sqrt{1-q}} \text{ V. T. 120, N. 6.}$$

$$13) \int l \left(\frac{1-x \operatorname{Cosh} p \lambda \cdot \operatorname{Cosh} p \mu \cdot \sqrt{1-x^2 \operatorname{Cot} h p^2 \lambda \cdot \operatorname{Tg} h p^2 \mu}}{1+x \operatorname{Cosh} p \lambda \cdot \operatorname{Cosh} p \mu \cdot \sqrt{1-x^2 \operatorname{Cot} h p^2 \lambda \cdot \operatorname{Tg} h p^2 \mu}} \right) \frac{dx}{\sqrt{1-x^2}} = \pi l \frac{4 \operatorname{Sh} p \lambda}{\{\operatorname{Sh} p \lambda + \sqrt{1-\operatorname{Cosh}^2 p \lambda \cdot \operatorname{Cosh}^2 p \mu}\} (1+\operatorname{Sh} p \lambda)} \text{ V. T. 325, N. 2.}$$

$$14) \int l \left(\frac{1+\sqrt{(1-x^2)(\operatorname{Sin}^2 \lambda - x^2 \operatorname{Sin}^2 \mu)}}{1-\sqrt{(1-x^2)(\operatorname{Sin}^2 \lambda - x^2 \operatorname{Sin}^2 \mu)}} \right) \frac{dx}{\sqrt{1-x^2}} = \pi l \left[\frac{1}{2} \left\{ \operatorname{Cos}^2 \frac{1}{2} \lambda + \sqrt{\operatorname{Cos}^2 \frac{1}{2} \lambda + \operatorname{Sin}^2 \frac{1}{2} \mu \cdot \operatorname{Cos}^2 \frac{1}{2} \mu} \right\} \right] \text{ V. T. 325, N. 1.}$$

$$15) \int l \left(\frac{1+q\sqrt{1-p^2 x^2}}{1-q\sqrt{1-p^2 x^2}} \right) \frac{dx}{\sqrt{(1-x^2)(1-p^2 x^2)}} = \pi F \left\{ \sqrt{1-p^2}, \operatorname{Arcsin} q \right\} \text{ V. T. 325, N. 11.}$$

F. Alg. rat. ent.;

Log. en dén. lx .

TABLE 123.

Lim. 0 et 1.

$$1) \int x^a \frac{dx}{lx} = \infty \text{ (IV, 233).}$$

$$2) \int (1-x)^p \frac{dx}{lx} = \sum_1^{\infty} (-1)^n \frac{p^{n-1}}{1^{n-1}} l(1+n) [p \geq 1] \text{ (VIII, 278).}$$

$$\int (x^p - x^q) \frac{dx}{lx} = l \frac{p+1}{q+1} \text{ (VIII, 346).} \quad 4) \int (x^q - 1) x^{p-1} \frac{dx}{lx} = l \frac{p+q}{p} \text{ (VIII, 347).}$$

$$\int (x^p - x^q) x^{r-1} \frac{dx}{lx} = l \frac{p+r}{p+q} \text{ (IV, 233).}$$

$$\int (x^p - 1)(x^q - 1) \frac{dx}{lx} = l \frac{p+q+1}{(p+1)(q+1)} \text{ (VIII, 347).}$$

$$\int (x^p - x^q)(x^r - x^s) \frac{dx}{lx} = l \frac{(p+r+1)(q+s+1)}{(p+s+1)(q+r+1)} \text{ (IV, 233).}$$

$$\int (x^p - 1)(x^q - 1) x^{r-1} \frac{dx}{lx} = l \frac{(p+q+r)r}{(p+r)(q+r)} \text{ (VIII, 347).}$$

$$\int (x^p - 1)(x^q - 1)(x^r - 1) \frac{dx}{lx} = l \frac{(p+q+r+1)(p+1)(q+1)(r+1)}{(p+q+1)(p+r+1)(q+r+1)} \text{ (VIII, 347).}$$

$$\int (x^p - 1)(x^q - 1)(x^r - 1) x^{s-1} \frac{dx}{lx} = l \frac{(p+q+r+s)(p+s)(q+s)(r+s)}{(p+q+s)(p+r+s)(q+r+s)s} \text{ (VIII, 347).}$$

$$\int (x^p - 1)^a \frac{dx}{lx} = \sum_0^a (-1)^n \binom{a}{n} l \{(a-n)p+1\} \text{ (VIII, 347).}$$

$$\int (x^p - 1)^a x^{q-1} \frac{dx}{lx} = \sum_0^a (-1)^n \binom{a}{n} l \{q+(a-n)p\} \text{ (VIII, 347).}$$

$$\int (x^p - 1)^a (x^q - 1) x^{r-1} \frac{dx}{lx} = \sum_0^a (-1)^n \binom{a}{n} l \frac{r+q+(a-n)p}{r+(a-n)p} \text{ (VIII, 347).}$$

$$\int (x^p - 1)^a (x^q - 1)(x^r - 1) \frac{dx}{lx} = \sum_0^a (-1)^n \binom{a}{n} l \frac{\{q+r+(a-n)p+1\} \{(a-n)p+1\}}{\{q+(a-n)p+1\} \{r+(a-n)p+1\}} \text{ (VIII, 348).}$$

$$\int (x^p - 1)^a (x^q - 1)^b \frac{dx}{lx} = \sum_0^a (-1)^n \binom{a}{n} \sum_0^b (-1)^m \binom{b}{m} l \{(b-m)q+(a-n)p+1\} \text{ (VIII, 348).}$$

$$\int (x^p - 1)^a (x^q - 1)^b x^{r-1} \frac{dx}{lx} = \sum_0^a (-1)^n \binom{a}{n} \sum_0^b (-1)^m \binom{b}{m} l \{r+(b-m)q+(a-n)p\} \text{ (VIII, 348).}$$

$$\int (x^{p-1} - x^{q-1})(1+rx)^a \frac{dx}{lx} = l \frac{p}{q} + \sum_1^{\infty} \binom{a}{n} r^n l \frac{p+n}{q+n} \text{ (VIII, 491).}$$

$$\int (x^{p-1} - x^{q-1}) l(1+rx) \frac{dx}{lx} = l \frac{p}{q} + \sum_1^{\infty} \frac{r^n}{n} l \frac{p+n}{q+n} \text{ (VIII, 491).}$$

$$1) \int (x^p - 1)^2 \frac{dx}{(lx)^2} = (2p+1)l(2p+1) - 2(p+1)l(p+1) \text{ (IV, 234).}$$

$$2) \int (x^p - 1)(x^q - 1) \frac{dx}{(lx)^2} = (p+q+1)l(p+q+1) - (q+1)l(q+1) - (p+1)l(p+1) \\ \text{(VIII, 348).}$$

$$3) \int (x^p - 1)^2 x^{q-1} \frac{dx}{(lx)^2} = (2p+q)l(2p+q) - 2(p+q)l(p+q) + q l q \text{ (IV, 234).}$$

$$4) \int (1-x^p)(1-x^q)(1-x^r) \frac{dx}{(lx)^2} = (p+q+1)l(p+q+1) + (p+r+1)l(p+r+1) + \\ + (q+r+1)l(q+r+1) - (p+1)l(p+1) - (q+1)l(q+1) - (r+1)l(r+1) - \\ - (p+q+r)l(p+q+r) \text{ (IV, 234).}$$

$$5) \int (1-x^p)^a \frac{dx}{(lx)^2} = \sum_1^a (-1)^n \binom{a}{n} (np+1)l(np+1) \text{ (VIII, 348).}$$

$$6) \int (1-x^p)^a x^{q-1} \frac{dx}{(lx)^2} = \sum_0^a (-1)^n \binom{a}{n} (q+np)l(q+np) \text{ (VIII, 348).}$$

$$7) \int (x^p - 1)^a (x^q - 1)^b \frac{dx}{(lx)^2} = \sum_0^a (-1)^n \binom{a}{n} \sum_0^b (-1)^m \binom{b}{m} \{(b-m)q + (a-n)p + 1\} \\ l\{(b-m)q + (a-n)p + 1\} \text{ (VIII, 348).}$$

$$8) \int (x^p - 1)^a (x^q - 1)^b x^{r-1} \frac{dx}{(lx)^2} = \sum_0^a (-1)^n \binom{a}{n} \sum_0^b (-1)^m \binom{b}{m} \{(b-m)q + (a-n)p + r\} \\ l\{(b-m)q + (a-n)p + r\} \text{ (VIII, 348).}$$

$$9) \int \{(q-r)x^{p-1} + (r-p)x^{q-1} + (p-q)x^{r-1}\} \frac{dx}{(lx)^2} = (q-r)p l p + (r-p)q l q + (p-q)r l r \\ \text{(VIII, 362).}$$

$$10) \int \left\{ 1 - \left(\frac{1}{2} - \frac{1}{lx} \right) (1-x) \right\} x^{q-1} \frac{dx}{lx} = 1 + \left(q + \frac{1}{2} \right) l \frac{q}{q+1} \text{ V. T. 89, N. 23.}$$

$$11) \int \left\{ 1 - x + \frac{x}{lx} \right\} \frac{dx}{lx} = l2 - 1 \text{ V. T. 89, N. 25.}$$

$$12) \int \left\{ (p-q) + \frac{1}{lx} (x^{q-1} - x^{p-1}) \right\} \frac{dx}{lx} = p - q + q l q - p l p \text{ V. T. 89, N. 21.}$$

$$13) \int (1-x^p)^a \frac{dx}{(lx)^2} = \frac{1}{2} \sum_1^a (-1)^n \binom{a}{n} (pn+1)^2 l(pn+1) \text{ (IV, 234).}$$

F. Alg. rat. ent.;

Log. en dén. $(lx)^a$.

TABLE 124, suite.

Lim. 0 et 1.

$$14) \int (1-x^p)^a x^{q-1} \frac{dx}{(lx)^3} = \frac{1}{2} \sum_0^a (-1)^n \binom{a}{n} (pn+q)^2 l(pn+q) \text{ (IV, 235).}$$

$$15) \int (1-x^p)^a (1-x^q) \frac{dx}{(lx)^3} = -\frac{1}{2} \sum_0^a (-1)^n \binom{a}{n} (q+pn+1)^2 l(q+pn+1) + \frac{1}{2} \sum_1^a (-1)^n \binom{a}{n} (pn+1)^2 l(pn+1) \text{ (IV, 235).}$$

$$16) \int \left\{ \frac{x^{p-1}}{(p-q)(p-r)(p-s)} + \frac{x^{q-1}}{(q-p)(q-r)(q-s)} + \frac{x^{r-1}}{(r-p)(r-q)(r-s)} + \frac{x^{s-1}}{(s-p)(s-q)(s-r)} \right\} \frac{dx}{(lx)^3} = \frac{1}{2} \left\{ \frac{p^2 lp}{(p-q)(p-r)(p-s)} + \frac{q^2 lq}{(q-p)(q-r)(q-s)} + \frac{r^2 lr}{(r-p)(r-q)(r-s)} + \frac{s^2 ls}{(s-p)(s-q)(s-r)} \right\} \text{ (IV, 234).}$$

$$17) \int x^{p-1} \frac{dx}{(lx)^q} = (-1)^q p^{q-1} \Gamma(1-q) [q < 1] \text{ (VIII, 439).}$$

$$18) \int x^{p-1} dx \left(\frac{x^q-1}{lx} \right)^a = \frac{1}{1^{a-1/1}} \Delta^a \cdot [(pq)^{a-1} l(pq)] \text{ (IV, 235).}$$

$$19) \int x^{p-1} (x^r-1)^a \frac{dx}{(lx)^{b+1}} = \frac{r^b}{1^{b/1}} \Delta^a \cdot [p^b lp] \text{ (IV, 235).}$$

$$20) \int (x^{q-1} - x^{r-1}) \frac{dx}{(lx)^{p+1}} = (-1)^{p+1} \Gamma(1-p) \frac{1}{p} (q^p - r^p) [p < 1] \text{ V. T. 90, N. 6.}$$

$$21) \int (x-1)^a x^{b-1} \frac{dx}{(lx)^{q+1}} = \frac{(-1)^q \pi}{\sin q \pi \cdot \Gamma(q+1)} \Delta^a \cdot b^q [q < a], = \frac{-1}{\Gamma(q+1)} \Delta^a \cdot b^q lb [q \text{ entier}] \text{ V. T. 90, N. 8.}$$

F. Alg. rat. ent.;

Log. en dén. binôme.

TABLE 125.

Lim. 0 et 1.

$$1) \int x^{p-1} \frac{dx}{q+lx} = e^{-pq} Ei(pq) \text{ V. T. 91, N. 4.}$$

$$2) \int x^{p-1} \frac{dx}{q-lx} = -e^{pq} Ei(-pq) \text{ V. T. 91, N. 1.}$$

$$3) \int x^{p-1} \frac{dx}{q^2 + (lx)^2} = \frac{1}{q} \left\{ Ci(pq) \cdot \sin pq - Si(pq) \cdot \cos pq + \frac{1}{2} \pi \cos pq \right\} \text{ V. T. 91, N. 7.}$$

$$4) \int x^{p-1} lx \frac{dx}{q^2 + (lx)^2} = Ci(pq) \cdot \cos pq + Si(pq) \cdot \sin pq - \frac{1}{2} \pi \sin pq \text{ V. T. 91, N. 8.}$$

$$5) \int x^{p-1} \frac{dx}{q^2 - (lx)^2} = \frac{1}{2q} \{ e^{-pq} Ei(pq) - e^{pq} Ei(-pq) \} \text{ V. T. 91, N. 14.}$$

$$6) \int x^{p-1} l x \frac{dx}{q^2 - (lx)^2} = -\frac{1}{2} \{e^{-pq} Ei(pq) + e^{pq} Ei(-pq)\} \text{ V. T. 91, N. 15.}$$

$$7) \int x^{p-1} \frac{dx}{q^2 - (lx)^2} = \frac{1}{4q^2} \{e^{-pq} Ei(pq) - e^{pq} Ei(-pq) + 2 Ci(pq) \cdot Sin pq - 2 Si(pq) \cdot Cos pq + \pi Cos pq\} \text{ V. T. 91, N. 18.}$$

$$8) \int x^{p-1} l x \frac{dx}{q^2 - (lx)^2} = \frac{1}{4q^2} \{-e^{pq} Ei(-pq) - e^{-pq} Ei(pq) + 2 Ci(pq) \cdot Cos pq + 2 Si(pq) \cdot Sin pq - \pi Sin pq\} \text{ V. T. 91, N. 19.}$$

$$9) \int x^{p-1} (lx)^2 \frac{dx}{q^2 - (lx)^2} = \frac{1}{4q} \{e^{-pq} Ei(pq) - e^{pq} Ei(-pq) - 2 Ci(pq) \cdot Sin pq + 2 Si(pq) \cdot Cos pq - \pi Cos pq\} \text{ V. T. 91, N. 20.}$$

$$10) \int x^{p-1} (lx)^2 \frac{dx}{q^2 - (lx)^2} = \frac{1}{4} \{-e^{-pq} Ei(pq) - e^{pq} Ei(-pq) - 2 Ci(pq) \cdot Cos pq - 2 Si(pq) \cdot Sin pq + \pi Sin pq\} \text{ V. T. 91, N. 21.}$$

$$11) \int x^{p-1} \frac{dx}{(q+lx)^2} = -\frac{1}{q} \{1 - pq e^{-pq} Ei(pq)\} \text{ V. T. 92, N. 4.}$$

$$12) \int x^{p-1} l x \frac{dx}{(q+lx)^2} = 1 + (1-pq) e^{-pq} Ei(pq) \text{ V. T. 125, N. 1, 11.}$$

$$13) \int x^{p-1} \frac{dx}{(q-lx)^2} = \frac{1}{q} \{1 + pq e^{pq} Ei(-pq)\} \text{ V. T. 92, N. 1.}$$

$$14) \int x^{p-1} l x \frac{dx}{(q-lx)^2} = 1 + (pq+1) e^{pq} Ei(-pq) \text{ V. T. 125, N. 2, 13.}$$

$$15) \int x^{p-1} \frac{dx}{\{q^2 + (lx)^2\}^2} = \frac{1}{2q^2} \{Ci(pq) \cdot Sin pq - Si(pq) \cdot Cos pq + \frac{1}{2} \pi Cos pq\} + \frac{p}{2q^2} \{Ci(pq) \cdot Cos pq + Si(pq) \cdot Sin pq - \frac{1}{2} \pi Sin pq\} \text{ V. T. 92, N. 6.}$$

$$16) \int x^{p-1} l x \frac{dx}{\{q^2 + (lx)^2\}^2} = \frac{p}{2q} \{Ci(pq) \cdot Sin pq - Si(pq) \cdot Cos pq + \frac{1}{2} \pi Cos pq\} - \frac{1}{2q^2} \text{ V. T. 92, N. 7.}$$

$$17) \int x^{p-1} (lx)^2 \frac{dx}{\{q^2 + (lx)^2\}^2} = \frac{1}{2q} \{Ci(pq) \cdot Sin pq - Si(pq) \cdot Cos pq + \frac{1}{2} \pi Cos pq\} - \frac{1}{2} p \{Ci(pq) \cdot Cos pq + Si(pq) \cdot Sin pq - \frac{1}{2} \pi Sin pq\} \text{ V. T. 125, N. 3, 15.}$$

$$18) \int x^{p-1} \frac{dx}{\{q^2 - (lx)^2\}^2} = \frac{1}{4q^2} \{(pq-1) e^{pq} Ei(-pq) + (1+pq) e^{-pq} Ei(pq)\} \text{ V. T. 92, N. 8.}$$

F. Alg. rat. ent.;
Log. en dén. binôme.

TABLE 125, suite.

Lim. 0 et 1.

$$19) \int x^{p-1} l x \frac{dx}{\{q^2 - (lx)^2\}^2} = \frac{1}{4q^2} \{pq \{e^{pq} Ei(-pq) - e^{-pq} Ei(pq)\} - 1\} \quad \text{V. T. 92, N. 9.}$$

$$20) \int x^{p-1} (lx)^2 \frac{dx}{\{q^2 - (lx)^2\}^2} = \frac{1}{4q^2} \{(pq+1)e^{pq} Ei(-pq) + (pq-1)e^{-pq} Ei(pq)\} \quad \text{V. T. 125, N. 5, 18.}$$

$$21) \int x^{p-1} \frac{dx}{(q+lx)^a} = \frac{p^{a-1}}{1^{a-1/1}} e^{-pq} Ei(pq) - \frac{1}{1^{a-1/1} q^{a-1}} \sum_1^{a-1} 1^{a-n-1/1} (pq)^{n-1} \quad \text{V. T. 92, N. 5.}$$

$$22) \int x^{p-1} \frac{dx}{(q-lx)^a} = (-1)^a \frac{p^{a-1}}{1^{a-1/1}} e^{pq} Ei(-pq) + \frac{1}{1^{a-1/1} q^{a-1}} \sum_1^{a-1} 1^{a-n-1/1} (-pq)^{n-1} \\ \text{V. T. 92, N. 2.}$$

F. Alg. rat. fract. à dén. monôme;
Log. en dén. monôme.

TABLE 126.

Lim. 0 et 1.

$$1) \int \left\{1 - \frac{1}{lx} + \frac{1}{x lx}\right\} \frac{dx}{lx} = 1 \quad \text{V. T. 89, N. 20.} \quad 2) \int \left\{\frac{x^q - 1}{x(lx)^2} - \frac{q}{lx}\right\} dx = qlq - q \quad (\text{IV, 237}).$$

$$3) \int \left\{\frac{x^q - 1}{x(lx)^2} - \frac{q}{x(lx)^2} - \frac{q^2}{2lx}\right\} dx = \frac{1}{2} q^2 lq - \frac{3}{4} q^2 \quad (\text{IV, 237}).$$

$$4) \int \left\{\frac{x^q - 1}{x(lx)^2} - \frac{q}{x(lx)^2} - \frac{q^2}{2x(lx)^2} - \frac{q^3}{6lx}\right\} dx = \frac{1}{6} q^2 lq - \frac{11}{36} q^2 \quad (\text{IV, 237}).$$

$$5) \int \left\{x - \left(\frac{1}{1-lx}\right)^q\right\} \frac{dx}{x lx} = -Z'(q) \quad \text{V. T. 80, N. 7.}$$

$$6) \int \left\{x^p - \frac{1}{1+q^2(lx)^2}\right\} \frac{dx}{x lx} = A + l \frac{p}{q} \quad \text{V. T. 92, N. 11.}$$

$$7) \int \left\{x - \frac{1}{1-lx}\right\} \frac{dx}{x lx} = A \quad \text{V. T. 92, N. 10.}$$

$$8) \int \left\{x^q - \frac{1}{1-plx}\right\} \frac{dx}{x lx} = l \frac{q}{p} + A \quad \text{V. T. 92, N. 10.}$$

$$9) \int \left\{x - \frac{1}{(1-lx)^p}\right\} \frac{dx}{x lx} = -Z'(p) \quad \text{V. T. 92, N. 15.}$$

$$10) \int \left\{\frac{x-1}{lx} - \frac{1}{1-lx}\right\} \frac{dx}{x lx} = A - 1 \quad \text{V. T. 92, N. 16.}$$

$$11) \int \frac{l(1-x^q)}{1+(lx)^2} \frac{dx}{x} = \pi \left\{l \Gamma\left(\frac{q}{2\pi} + 1\right) - \frac{1}{2} lq + \frac{q}{2\pi} \left(l \frac{q}{2\pi} - 1\right)\right\} \quad \text{V. T. 354, N. 6.}$$

$$12) \int \frac{x lx + 1 - x}{x(lx)^2} l(1+x) dx = l \frac{4}{\pi} \quad \text{V. T. 127, N. 3.}$$

$$1) \int \frac{1}{1+x} \frac{dx}{lx} = -\infty = \quad 2) \int \frac{1}{1-x} \frac{dx}{lx} \text{ (VIII, 264).}$$

$$3) \int \frac{1-x}{1+x} \frac{dx}{lx} = l \frac{2}{\pi} \text{ (IV, 238). } 4) \int \frac{1-x^{p-1}}{1+x} \frac{dx}{lx} = l \Gamma\left(\frac{q}{2}\right) - l \Gamma\left(\frac{q+1}{2}\right) - \frac{1}{2} l \pi \text{ (IV, 238).}$$

$$5) \int \frac{x^{p-1} - x^{q-1}}{1+x} \frac{dx}{lx} = l \frac{\Gamma\left(\frac{q}{2}\right) \Gamma\left(\frac{p+1}{2}\right)}{\Gamma\left(\frac{p}{2}\right) \Gamma\left(\frac{q+1}{2}\right)} \text{ (IV, 238).}$$

$$6) \int \frac{1-x^p}{1+x} \frac{x^q dx}{lx} = l \frac{\Gamma\left(\frac{1}{2}q+1\right) \Gamma\left(\frac{p+q+1}{2}\right)}{\Gamma\left(\frac{q+1}{2}\right) \Gamma\left(\frac{p+q}{2}+1\right)} \text{ (IV, 238).}$$

$$7) \int \frac{x^{p-1} - x^{q-1}}{1+x} \frac{1+x^{2u+1}}{lx} dx = l \frac{\left(\frac{p}{2}\right)^{a+1/1} \left(\frac{q+1}{2}\right)^{a/1}}{\left(\frac{p+1}{2}\right)^{a/1} \left(\frac{q}{2}\right)^{a+1/1}} \text{ (IV, 238).}$$

$$8) \int \frac{1-x^p}{1-x} \frac{1-x^q}{lx} dx = l \frac{\Gamma(p+1) \Gamma(q+1)}{\Gamma(p+q+1)} \text{ (VIII, 349).}$$

$$9) \int \frac{1-x^p}{1-x} \frac{1-x^q}{lx} x^{r-1} dx = l \frac{\Gamma(p+r) \Gamma(q+r)}{\Gamma(p+q+r) \Gamma(r)} \text{ (VIII, 349).}$$

$$10) \int \frac{(1-x^p)(1-x^q)}{1-x} \frac{1-x^r}{lx} dx = l \frac{\Gamma(p+1) \Gamma(q+1) \Gamma(r+1) \Gamma(p+q+r+1)}{\Gamma(p+q+1) \Gamma(p+r+1) \Gamma(q+r+1)} \text{ (VIII, 349).}$$

$$11) \int \frac{(1-x^p)(1-x^q)}{1-x} \frac{1-x^r}{lx} x^{s-1} dx = l \frac{\Gamma(p+s) \Gamma(q+s) \Gamma(r+s) \Gamma(p+q+r+s)}{\Gamma(p+q+s) \Gamma(p+r+s) \Gamma(q+r+s) \Gamma(s)} \text{ (IV, 239).}$$

$$12) \int \frac{(1-x^p)^a}{1-x} \frac{dx}{lx} = \sum_0^a (-1)^{n-1} l \Gamma\{(a-n)p+1\} \text{ (VIII, 349).}$$

$$13) \int \frac{(1-x^p)^a}{1-x} \frac{x^{q-1} dx}{lx} = \sum_0^a (-1)^{n-1} l \Gamma\{(a-n)p+q\} \text{ (VIII, 349).}$$

$$14) \int \left\{ \frac{1}{1+x} - \frac{1}{2} x \right\} \frac{dx}{lx} = -\frac{1}{2} l \pi \text{ V. T. 94, N. 6. } 15) \int \left\{ \frac{1}{lx} + \frac{1}{1-x} \right\} dx = A \text{ (IV, 238).}$$

$$16) \int \left\{ \frac{1}{lx} + \frac{x^{q-1}}{1-x} \right\} dx = -Z'(q) \text{ (VIII, 552).}$$

$$17) \int \left\{ \frac{x^{p-1}}{lx} + \frac{x^{q-1}}{1-x} \right\} dx = lp - Z'(q) \text{ V. T. 123, N. 3 et T. 127, N. 16.}$$

$$18) \int \left\{ \frac{1-x^{q-1}}{1-x} + 1-q \right\} \frac{dx}{lx} = l\Gamma(q) \text{ (VIII, 552).}$$

$$19) \int \left\{ \frac{x^p - x^{p+q}}{1-x} - q \right\} \frac{dx}{lx} = l \frac{\Gamma(p+q+1)}{\Gamma(p+1)} \text{ (IV, 239).}$$

$$20) \int \left\{ \frac{1}{lx} + \frac{1}{1-x} - \frac{1}{2} \right\} \frac{dx}{lx} = \frac{1}{2} l 2\pi - 1 = \quad 21) \int \left\{ \frac{1}{lx} + \frac{1}{2} \frac{1+x}{1-x} \right\} \frac{dx}{lx} \text{ V. T. 94, N. 29, 30.}$$

$$22) \int \left\{ \frac{1}{lx} + \frac{1}{2} \frac{1+x}{1-x} - l \right\} \frac{dx}{lx} = \frac{1}{2} l 2\pi = \quad 23) \int \left\{ \frac{1}{lx} + \frac{1}{2} x + \frac{x}{1-x} \right\} \frac{dx}{x lx} \text{ V. T. 94, N. 31, 32.}$$

$$24) \int \left\{ p + \frac{x^{p-1}}{lx} - \frac{1}{2} x^{p-1} - \frac{1}{1-x} \right\} \frac{dx}{lx} = -\left(p + \frac{1}{2}\right) l p + p - \frac{1}{2} l 2\pi \text{ V. T. 94, N. 28.}$$

$$25) \int \left\{ p-1 - \frac{1}{1-x} + \left(\frac{1}{2} - \frac{1}{lx}\right) x^{p-1} \right\} \frac{dx}{lx} = \left(\frac{1}{2} - p\right) l p + p - \frac{1}{2} l 2\pi \text{ V. T. 94, N. 26.}$$

$$1) \int \frac{x}{1-x^2} \frac{dx}{lx} = -\infty \text{ (VIII, 264).}$$

$$2) \int \frac{(1-x)^2}{1+x^2} \frac{dx}{lx} = l \frac{\pi}{4} \text{ V. T. 130, N. 7.}$$

$$3) \int \frac{1-x^2}{1+x^2} \frac{dx}{lx} = l \cot \frac{3\pi}{8} \text{ (IV, 240).}$$

$$4) \int \frac{x^{p-1} - x^{q-1}}{1+x^2} \frac{dx}{lx} = l \frac{\Gamma\left(\frac{p+2}{4}\right) \Gamma\left(\frac{q}{4}\right)}{\Gamma\left(\frac{p}{4}\right) \Gamma\left(\frac{q+2}{4}\right)} \text{ Lindmann, Gr. 35, 475.}$$

$$5) \int \frac{x^{p+q-1} - x^{p-q-1}}{1+x^{2p}} \frac{dx}{lx} = l Tg\left(\frac{p+q}{4p}\pi\right) \text{ (VIII, 350).}$$

$$6) \int \frac{1-x^{2p-2q}}{1+x^{2p}} \frac{x^{q-1} dx}{lx} = l Tg \frac{q\pi}{4p} \text{ (IV, 240).}$$

$$7) \int \frac{x^{p-1} - x^{q-1}}{1+x^{2/2(a+1)}} \frac{1+x^2}{lx} dx = l \frac{\Gamma\left\{\frac{p+4a+4}{4(2a+1)}\right\} \Gamma\left\{\frac{q+2}{4(2a+1)}\right\} \Gamma\left\{\frac{p+4a+2}{4(2a+1)}\right\} \Gamma\left\{\frac{q}{4(2a+1)}\right\}}{\Gamma\left\{\frac{q+4a+4}{4(2a+1)}\right\} \Gamma\left\{\frac{p+2}{4(2a+1)}\right\} \Gamma\left\{\frac{q+4a+2}{4(2a+1)}\right\} \Gamma\left\{\frac{p}{4(2a+1)}\right\}}$$

Lindmann, Gr. 35, 475.

$$8) \int \frac{x^{p+q-1} + x^{p-q-1} - 2x^{p-1}}{1-x^{2p}} \frac{dx}{lx} = l \cos \frac{q\pi}{2p} \text{ (VIII, 350).}$$

$$9) \int \frac{(1-x^{p-q})^2}{1-x^{2p}} \frac{x^{q-1} dx}{lx} = l \sin \frac{q\pi}{2p} \text{ (IV, 240).}$$

$$10) \int \frac{(1-x^q)^2}{1-x^{2p}} \frac{x^{p-q-1} dx}{lx} = l \left(\frac{p}{q\pi} \sin \frac{q\pi}{p} \right) [p > q] \text{ (IV, 240).}$$

$$11) \int \frac{x^{p-1} - x^{q-1}}{1-x^{2a}} \frac{1-x^2}{lx} dx = l \frac{\Gamma\left(\frac{p+2}{2a}\right) \Gamma\left(\frac{q}{2a}\right)}{\Gamma\left(\frac{p}{2a}\right) \Gamma\left(\frac{q+2}{2a}\right)} \text{ Lindmann, Gr. 35, 475.}$$

$$12) \int \frac{1-x^p}{1-x^2} \frac{1-x^{p+1}}{lx} dx = -p l 2 [p > -1] \text{ (VIII, 349).}$$

$$13) \int \left\{ \frac{2-x}{2lx} + \frac{1}{1-x^2} - \frac{1-x}{2} \right\} \frac{dx}{lx} = 0 \text{ V. T. 94, N. 22.}$$

$$14) \int \left\{ \frac{1}{1-x^2} + \frac{1}{2lx} - \frac{1}{2} \right\} \frac{dx}{lx} = \frac{1}{2} (l 2 - 1) \text{ V. T. 94, N. 25.}$$

$$15) \int \left\{ q - \frac{1}{2} + \frac{(1-x)(1+qlx) + xlx}{(1-x)^2} x^{q-1} \right\} \frac{dx}{lx} = \frac{1}{2} - q - l\Gamma(q) + \frac{1}{2} l 2\pi \text{ (IV, 242).}$$

$$1) \int \frac{lx}{4\pi^2 + (lx)^2} \frac{dx}{1-x} = \frac{1}{4} - \frac{1}{2} A \text{ V. T. 97, N. 14.}$$

$$2) \int \frac{lx}{q^2 + (lx)^2} \frac{dx}{1-x} = \frac{1}{2} \left\{ \frac{\pi}{q} + l \frac{2\pi}{q} + Z' \left(\frac{q}{2\pi} \right) \right\} \text{ V. T. 97, N. 20.}$$

$$3) \int \frac{lx}{q^2 - (lx)^2} \frac{dx}{1-x} = \frac{\pi^2}{q^2} \sum_0^{\infty} \frac{(-1)^{n-1}}{n+1} B_{2n+1} \left(\frac{2\pi}{q} \right)^{2n} \text{ V. T. 97, N. 21.}$$

$$4) \int \frac{lx}{\{q^2 + (lx)^2\}^2} \frac{dx}{1-x} = -\frac{\pi^2}{q^4} \sum_0^{\infty} B_{2n+1} \left(\frac{2\pi}{q} \right)^{2n} \text{ V. T. 97, N. 22.}$$

$$5) \int \frac{lx}{\{q^2 - (lx)^2\}^2} \frac{dx}{1-x} = \frac{\pi^2}{q^4} \sum_0^{\infty} (-1)^{n+1} B_{2n+1} \left(\frac{2\pi}{q} \right)^{2n} \text{ V. T. 97, N. 23.}$$

$$6) \int \frac{1}{\pi^2 + (lx)^2} \frac{dx}{1+x^2} = \frac{4-\pi}{4\pi} \text{ V. T. 97, N. 1.}$$

$$7) \int \frac{1}{\pi^2 + 4(lx)^2} \frac{dx}{1+x^2} = \frac{1}{4\pi} l 2 \text{ V. T. 97, N. 2.}$$

- 8) $\int \frac{1}{x^2 + 16(lx)^2} \frac{dx}{1+x^2} = \frac{1}{8\pi\sqrt{2}} \left\{ \pi + i \frac{\sqrt{2}-1}{\sqrt{2}+1} \right\}$ V. T. 97, N. 3.
- 9) $\int \frac{1}{q^2 + (lx)^2} \frac{dx}{1+x^2} = \frac{1}{4q} \left\{ Z' \left(\frac{2q+3\pi}{4\pi} \right) - Z' \left(\frac{2q+\pi}{4\pi} \right) \right\}$ V. T. 97, N. 4.
- 10) $\int \frac{lx}{x^2 + (lx)^2} \frac{dx}{1-x^2} = \frac{1}{2} \left(\frac{1}{2} - i2 \right)$ V. T. 97, N. 7.
- 11) $\int \frac{lx}{x^2 + 4(lx)^2} \frac{dx}{1-x^2} = \frac{2-\pi}{16}$ V. T. 97, N. 8.
- 12) $\int \frac{lx}{x^2 + 16(lx)^2} \frac{dx}{1-x^2} = -\frac{\pi}{32\sqrt{2}} + \frac{1}{16} + \frac{1}{32\sqrt{2}} i \frac{\sqrt{2}-1}{\sqrt{2}+1}$ V. T. 97, N. 9.
- 13) $\int \frac{lx}{x^2 + (lx)^2} \frac{xdx}{1-x^2} = \frac{1}{4} - \frac{1}{2} A$ V. T. 97, N. 14.
- 14) $\int \frac{lx}{q^2 + (lx)^2} \frac{xdx}{1-x^2} = \frac{1}{2} \left\{ \frac{\pi}{2q} + i \frac{\pi}{q} + Z' \left(\frac{q}{\pi} \right) \right\}$ V. T. 97, N. 20.
- 15) $\int \frac{lx}{q^2 - (lx)^2} \frac{xdx}{1-x^2} = \frac{\pi^2}{4q^2} \sum_{n=0}^{\infty} \frac{(-1)^{n-1}}{n+1} B_{2n+1} \left(\frac{\pi}{q} \right)^{2n}$ V. T. 97, N. 21.
- 16) $\int \frac{lx}{\{q^2 + (lx)^2\}^2} \frac{xdx}{1-x^2} = -\frac{\pi^2}{4q^2} \sum_{n=0}^{\infty} B_{2n+1} \left(\frac{\pi}{q} \right)^{2n}$ V. T. 97, N. 22.
- 17) $\int \frac{lx}{\{q^2 - (lx)^2\}^2} \frac{xdx}{1-x^2} = \frac{\pi^2}{4q^2} \sum_{n=0}^{\infty} (-1)^{n-1} B_{2n+1} \left(\frac{\pi}{q} \right)^{2n}$ V. T. 97, N. 23.

- 1) $\int \frac{1}{1+x^2+2x\cos\lambda} \frac{dx}{(lx)^{1-q}} = \operatorname{Cosec}\lambda \cdot \Gamma(q) \sum_{n=1}^{\infty} (-1)^{n-1} n^{-q} \operatorname{Sin} n\lambda$ (VIII, 489).
- 2) $\int \frac{x^q - x^p}{1+x^2+2x\cos\frac{a\pi}{b}} \frac{dx}{lx} = \operatorname{Cosec}\frac{a\pi}{b} \cdot \sum_{n=1}^{b-1} (-1)^n \operatorname{Sin}\frac{na\pi}{b} \cdot i \frac{\Gamma\left(\frac{p+b+n}{2b}\right) \Gamma\left(\frac{q+n}{2b}\right)}{\Gamma\left(\frac{q+b+n}{2b}\right) \Gamma\left(\frac{p+n}{2b}\right)} [a+b]_{\text{impair}},$
 $= \operatorname{Cosec}\frac{a\pi}{b} \cdot \sum_{n=1}^{b-1} (-1)^n \operatorname{Sin}\frac{na\pi}{b} \cdot i \frac{\Gamma\left(\frac{p+b-n}{b}\right) \Gamma\left(\frac{q+n}{b}\right)}{\Gamma\left(\frac{q+b-n}{b}\right) \Gamma\left(\frac{p+n}{b}\right)} [a+b]_{\text{pair}}$ (IV, 242).

$$3) \int \frac{(1-x)^2}{1+x^2+2x\cos\frac{a\pi}{b}} \frac{dx}{x} = \operatorname{Cosec} \frac{a\pi}{b} \cdot \sum_1^{b-1} (-1)^n \sin \frac{na\pi}{b} \cdot l \frac{\left\{ \Gamma\left(\frac{b+n+1}{2b}\right) \right\}^2 \Gamma\left(\frac{n+2}{2b}\right) \Gamma\left(\frac{n}{2b}\right)}{\left\{ \Gamma\left(\frac{n+1}{2b}\right) \right\}^2 \Gamma\left(\frac{b+n}{2b}\right) \Gamma\left(\frac{b+n+2}{2b}\right)} \left[\begin{smallmatrix} a+b \\ \text{impair} \end{smallmatrix} \right] =$$

$$= \operatorname{Cosec} \frac{a\pi}{b} \cdot \sum_1^{b-1} (-1)^n \sin \frac{na\pi}{b} \cdot l \frac{\left\{ \Gamma\left(\frac{b-n+1}{b}\right) \right\}^2 \Gamma\left(\frac{n+2}{b}\right) \Gamma\left(\frac{n}{b}\right)}{\left\{ \Gamma\left(\frac{n+1}{b}\right) \right\}^2 \Gamma\left(\frac{b-n}{b}\right) \Gamma\left(\frac{b-n+2}{b}\right)} \left[\begin{smallmatrix} a+b \\ \text{pair} \end{smallmatrix} \right] \text{ (IV, 243).}$$

$$4) \int \left\{ Tg \frac{a\pi}{2b} - \frac{2x^a \sin \frac{a\pi}{b}}{1+x^2+2x\cos\frac{a\pi}{b}} \right\} \frac{dx}{x} = -Tg \frac{a\pi}{2b} \cdot l(2b) + 2 \sum_1^{b-1} (-1)^n \sin \frac{na\pi}{b} \cdot l \frac{\Gamma\left(\frac{q+b+n}{2b}\right)}{\Gamma\left(\frac{q+n}{2b}\right)} \left[\begin{smallmatrix} a+b \\ \text{impair} \end{smallmatrix} \right] =$$

$$= -Tg \frac{a\pi}{2b} \cdot lb + 2 \sum_1^{b-1} (-1)^n \sin \frac{na\pi}{b} \cdot l \frac{\Gamma\left(\frac{q+b-n}{b}\right)}{\Gamma\left(\frac{q+n}{b}\right)} \left[\begin{smallmatrix} a+b \\ \text{pair} \end{smallmatrix} \right] \text{ (IV, 248).}$$

Dans 2) à 4) on a $a < b$.

$$5) \int \frac{1+x}{1+x^2+2x\cos\lambda} \frac{dx}{(x)^{1-\lambda}} = \sec \frac{1}{2} \lambda \cdot \Gamma(q) \sum_1^{\infty} (-1)^{n-1} \frac{\cos\left\{\left(n-\frac{1}{2}\right)\lambda\right\}}{n^q} \text{ (VIII, 489).}$$

$$6) \int \frac{x^q - x^{1-q}}{1+x} \frac{dx}{x} = iTg \frac{1}{2} q\pi \text{ V. T. 130, N. 9.}$$

$$7) \int \frac{(x^q - x^{-q})^2}{1+x} \frac{dx}{x} = l(q\pi \cot q\pi) \text{ (VIII, 585*)}. \quad \text{V. T. 130, N. 10.}$$

$$8) \int \frac{x^q - x^{-q}}{1+x^2} \frac{dx}{x} = iTg \left(\frac{q+1}{4} \pi \right) \text{ V. T. 95, N. 3.}$$

$$9) \int \frac{x^p - x^{-p}}{1+x^r} \frac{dx}{x} = iTg \frac{p\pi}{2r} \text{ (IV, 244).}$$

$$10) \int \frac{x^p - x^q}{1+x^r} \frac{1+x^{r-p-q}}{x} \frac{dx}{x} = l \left\{ Tg \frac{p\pi}{2r} \cdot \cot \frac{q\pi}{2r} \right\} \text{ V. T. 130, N. 9.}$$

$$11) \int \frac{x^q + x^{-q} - 2}{1-x} \frac{dx}{x} = l \left(\frac{1}{q\pi} \sin q\pi \right) \text{ (VIII, 585).}$$

$$12) \int \frac{(x^q - x^{-q})^2}{1-x^2} \frac{dx}{x} = l \cos q\pi \text{ V. T. 130, N. 7, 13.}$$

$$13) \int \frac{(x^q - x^{-q})^2}{1-x^2} \frac{xdx}{x} = l \left(\frac{1}{q\pi} \sin q\pi \right) \text{ V. T. 130, N. 11.}$$

$$14) \int \frac{(x^q - x^{-q})^2}{x^p - x^{-p}} \frac{dx}{x \ln x} = \text{Isoc} \frac{q\pi}{p} \text{ (VIII, 350).}$$

$$15) \int \frac{x^p - x^q}{(1 - rx)^2} \frac{dx}{x \ln x} = \text{Isoc} \frac{p}{q} + \sum_1^{\infty} \frac{r^{n/2}}{1^{n/2}} r^n \text{Isoc} \frac{p+n}{q+n} [r^2 \leq 1] \text{ (VIII, 491).}$$

$$16) \int \frac{1-x}{1+x} \frac{1}{1+x^2} \frac{dx}{\ln x} = -\frac{1}{2} \text{Isoc} 2 \text{ (VIII, 350).}$$

$$17) \int \frac{1-x}{1+x} \frac{x^2}{1+x^2} \frac{dx}{\ln x} = \text{Isoc} \frac{2\sqrt{2}}{\pi} \text{ V. T. 127, N. 3 et T. 130, N. 16.}$$

$$18) \int \left\{ (1-x) - \frac{(1-x^p)(1-x^q)}{1-x} \right\} \frac{dx}{x \ln x} = -\frac{\Gamma(p)\Gamma(q)}{\Gamma(p+q)} \text{ (IV, 243).}$$

$$19) \int \left\{ \frac{1}{1-x^2} + \frac{1}{2x \ln x} \right\} dx = -\frac{1}{2} \text{Isoc} 2 \text{ V. T. 95, N. 11.}$$

$$20) \int \left\{ \frac{x^{p-1}}{1-x} - \frac{x^{p+q-1}}{1-x^q} - \frac{1}{x(1-x)} + \frac{1}{x(1-x^q)} \right\} \frac{dx}{\ln x} = q \text{Isoc} p \text{ V. T. 94, N. 15.}$$

$$21) \int \left\{ \frac{1}{1-x} - \frac{px^{p-1}}{1-x^p} + \left(pq - \frac{p+1}{2} \right) x^{p-1} + (1-pq) \right\} \frac{dx}{\ln x} = \frac{1-p}{2} \text{Isoc} (2\pi) + \left(pq - \frac{1}{2} \right) \text{Isoc} p \text{ (IV, 244).}$$

$$22) \int \left\{ \frac{x^{q-1}}{1-x} - \frac{x^{p+q-1}}{1-x^p} - \frac{p-1}{1-x^p} x^{p-1} - \frac{1}{2} (p-1) x^{p-1} \right\} \frac{dx}{\ln x} = \frac{1-p}{2} \text{Isoc} (2\pi) + \left(pq - \frac{1}{2} \right) \text{Isoc} p \text{ (IV, 244).}$$

$$23) \int \left\{ \frac{p}{x^p - x^{-p}} - \frac{q}{x^q - x^{-q}} \right\} \frac{dx}{x \ln x} = \frac{1}{2} (q-p) \text{Isoc} 2 \text{ V. T. 95, N. 12.}$$

$$24) \int \left\{ \frac{(p+qx^n)x^n}{r+sx^n+tx^{2n}} - \frac{(p+qx^n)x^n}{r+sx^n+tx^{2n}} \right\} \frac{dx}{\ln x} = \frac{p+q}{r+s+t} \text{Isoc} \frac{n}{m} \text{ V. T. 96, N. 7.}$$

$$1) \int \frac{x^q + x^{-q}}{x^r + x^{-r}} \frac{dx}{x (\ln x)^p} = \Gamma(1-p) \sum_0^{\infty} (-1)^{p+n} \left[\frac{1}{\{(2n+1)r-q\}^{1-p}} + \frac{1}{\{(2n+1)r+q\}^{1-p}} \right] \text{ V. T. 95, N. 9.}$$

$$2) \int \frac{x^q - x^{-q}}{x^r - x^{-r}} \frac{dx}{x (\ln x)^p} = (-1)^p \Gamma(1-p) \sum_0^{\infty} \left[\frac{1}{\{(2n+1)r-q\}^{1-p}} - \frac{1}{\{(2n+1)r+q\}^{1-p}} \right] \text{ V. T. 95, N. 10.}$$

$$3) \int \frac{x^p + x^{-p}}{1-x^2} \frac{\ln x \cdot dx}{\pi^2 + (\ln x)^2} = \frac{1}{2} [1 - p\pi \sin p\pi - \cos p\pi \cdot l \{2(1 + \cos p\pi)\}] [p \leq 1] \text{ V. T. 97, N. 12.}$$

$$4) \int \frac{x^p - x^{-p}}{1-x^2} \frac{dx}{\pi^2 + (\ln x)^2} = \frac{1}{2\pi} [p\pi \cos p\pi - \sin p\pi \cdot l \{2(1 + \cos p\pi)\}] [p \leq 1] \text{ V. T. 97, N. 10.}$$

$$5) \int \frac{x^p + x^{-p}}{1-x^2} \frac{\ln x \cdot dx}{\pi^2 + 4(\ln x)^2} = \frac{1}{4} - \frac{1}{8}\pi \cos \frac{1}{2}p\pi + \frac{1}{8}\sin \frac{1}{2}p\pi \cdot l \frac{1 - \sin \frac{1}{2}p\pi}{1 + \sin \frac{1}{2}p\pi} [p < 1] \text{ V. T. 97, N. 13.}$$

$$6) \int \frac{x^p - x^{-p}}{1-x^2} \frac{dx}{\pi^2 + 4(\ln x)^2} = \frac{1}{4\pi} \cos \frac{1}{2}p\pi \cdot l \frac{1 + \sin \frac{1}{2}p\pi}{1 - \sin \frac{1}{2}p\pi} - \frac{1}{4}\sin \frac{1}{2}p\pi [p \leq 1] \text{ V. T. 97, N. 11.}$$

$$7) \int \frac{1}{x^p + x^{-p}} \frac{1}{q^2 + (\ln x)^2} \frac{dx}{x} = \frac{\pi}{q} \sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{2pq + (2n-1)\pi} \text{ V. T. 97, N. 5.}$$

$$8) \int \frac{x^p - x^{-p}}{x^p + x^{-p}} \frac{\ln x}{q^2 + (\ln x)^2} \frac{dx}{x} = \pi \sum_{n=1}^{\infty} \frac{1}{2pq + (2n-1)\pi} \text{ V. T. 97, N. 6.}$$

$$9) \int \frac{\ln x}{x^p - x^{-p}} \frac{1}{q^2 + (\ln x)^2} \frac{dx}{x} = \frac{\pi}{4pq} + \frac{\pi}{2} \sum_{n=1}^{\infty} \frac{(-1)^n}{pq + n\pi} \text{ V. T. 97, N. 16.}$$

$$10) \int \frac{x^p + x^{-p}}{x^p - x^{-p}} \frac{\ln x}{q^2 + (\ln x)^2} \frac{dx}{x} = \frac{\pi}{2pq} + \pi \sum_{n=1}^{\infty} \frac{1}{pq + n\pi} \text{ V. T. 97, N. 17.}$$

$$11) \int \frac{x^{p-r} + x^{r-p}}{x^r - x^{-r}} \frac{\ln x}{q^2 + (\ln x)^2} \frac{dx}{x} = \frac{\pi}{2qr} + \pi \sum_{n=1}^{\infty} \frac{1}{qr + n\pi} \cos \frac{np\pi}{r} [p^2 < r^2] \text{ V. T. 97, N. 19.}$$

$$12) \int \frac{x^{p-r} - x^{r-p}}{x^r - x^{-r}} \frac{1}{q^2 + (\ln x)^2} \frac{dx}{x} = -\frac{\pi}{q} \sum_{n=1}^{\infty} \frac{1}{qr + n\pi} \sin \frac{np\pi}{r} [p^2 < r^2] \text{ V. T. 97, N. 18.}$$

$$13) \int \left\{ \left(q - \frac{1}{2} \right) \frac{x^{p-1} - x^{r-1}}{\ln x} + \frac{px^{p-1}}{1-x^p} - \frac{rx^{r-1}}{1-x^r} \right\} \frac{dx}{\ln x} = (p-r) \left\{ \frac{1}{2} - q - \Gamma(q) + \frac{1}{2}\Gamma(2\pi) \right\} \text{ (IV, 245).}$$

$$1) \int \frac{1}{(1+x)\sqrt{x}} \frac{dx}{\pi^2 + (\ln x)^2} = \frac{1}{2\pi} \ln 2 \text{ V. T. 97, N. 2.}$$

$$2) \int \frac{1}{(1+x)\sqrt{x}} \frac{dx}{4\pi^2 + (\ln x)^2} = \frac{4-\pi}{8\pi} \text{ V. T. 97, N. 1.}$$

$$3) \int \frac{1}{(1+x)\sqrt{x}} \frac{dx}{\pi^2 + 4(\ln x)^2} = \frac{1}{4\pi\sqrt{2}} \left\{ \pi + l \frac{\sqrt{2}-1}{\sqrt{2}+1} \right\} \text{ V. T. 97, N. 3.}$$

$$4) \int \frac{1}{(1+x)\sqrt{x}} \frac{dx}{q^2 + (\ln x)^2} = \frac{1}{4q} \left\{ Z' \left(\frac{q+3\pi}{4\pi} \right) - Z' \left(\frac{q+\pi}{4\pi} \right) \right\} \text{ V. T. 97, N. 4.}$$

- 5) $\int \frac{l x}{(1-x)\sqrt{x}} \frac{dx}{\pi^2 + (l x)^2} = \frac{1}{2} - \frac{1}{4} \pi$ V. T. 97, N. 8.
- 6) $\int \frac{l x}{(1-x)\sqrt{x}} \frac{dx}{\pi^2 + 4(l x)^2} = -\frac{\pi}{8\sqrt{2}} + \frac{1}{4} + \frac{1}{8\sqrt{2}} l \frac{\sqrt{2}-1}{\sqrt{2}+1}$ V. T. 97, N. 9.
- 7) $\int \frac{1}{(1+\sqrt{x})\sqrt{x}} \frac{dx}{\pi^2 + (l x)^2} = \frac{1}{2\pi\sqrt{2}} \left\{ \pi + l \frac{\sqrt{2}-1}{\sqrt{2}+1} \right\}$ V. T. 97, N. 3.
- 8) $\int \frac{l x}{(1-\sqrt{x})\sqrt{x}} \frac{dx}{\pi^2 + (l x)^2} = -\frac{\pi}{2\sqrt{2}} + 1 + \frac{1}{2\sqrt{2}} l \frac{\sqrt{2}-1}{\sqrt{2}+1}$ V. T. 97, N. 9.
- 9) $\int \frac{x^p - x^{-p}}{(1-x)\sqrt{x}} \frac{dx}{\pi^2 + (l x)^2} = -\frac{1}{2} \sin p \pi + \frac{1}{2\pi} \cos p \pi \cdot l \frac{1 + \sin p \pi}{1 - \sin p \pi} \left[p < \frac{1}{2} \right]$ V. T. 97, N. 11.
- 10) $\int \frac{x^p + x^{-p}}{(1-x)\sqrt{x}} \frac{l x \cdot dx}{\pi^2 + (l x)^2} = 1 - \frac{1}{2} \pi \cos p \pi + \frac{1}{2} \sin p \pi \cdot l \frac{1 - \sin p \pi}{1 + \sin p \pi} \left[p < \frac{1}{2} \right]$ V. T. 97, N. 13.
- 11) $\int \frac{x^p - x^{-p}}{(1-x)\sqrt{x}} \frac{dx}{4\pi^2 + (l x)^2} = -\frac{1}{4\pi} [2p\pi \cos 2p\pi + \sin p \pi \cdot l \{2(1 + \cos 2p\pi)\}]$ V. T. 97, N. 10.
- 12) $\int \frac{x^p + x^{-p}}{(1-x)\sqrt{x}} \frac{l x \cdot dx}{4\pi^2 + (l x)^2} = \frac{1}{2} [-1 + 2p\pi \sin 2p\pi + \cos 2p\pi \cdot l \{2(1 + \cos 2p\pi)\}]$
V. T. 97, N. 12.
- 13) $\int \frac{x^{\frac{1}{2}(p-1)} - x^{\frac{1}{2}(1-p)}}{(1-x)\sqrt{x}} \frac{dx}{q^2 + (l x)^2} = \frac{2\pi}{q} \sum_{n=1}^{\infty} \frac{\sin n p \pi}{q + n \pi} [p < 1]$ V. T. 97, N. 18.
- 14) $\int \frac{x^{\frac{1}{2}(p-1)} + x^{\frac{1}{2}(1-p)}}{(1-x)\sqrt{x}} \frac{l x \cdot dx}{q^2 + (l x)^2} = -\frac{\pi}{q} - 2\pi \sum_{n=1}^{\infty} \frac{\cos n p \pi}{q + n \pi}$ V. T. 97, N. 19.
- 15) $\int \frac{1-x^{q-1}}{1-x} \frac{1-x^{q-\frac{1}{2}}}{\sqrt{x}} \frac{dx}{l x} = -(2q-2) l 2$ (IV, 246).
- 16) $\int \left\{ \frac{1}{1-x} + \frac{1}{l x} - \frac{1}{2} \right\} \frac{dx}{l x \cdot \sqrt{x}} = \frac{1}{2} (l 2 - 1)$ V. T. 94, N. 24.
- 17) $\int \left\{ \frac{1}{l x} - \frac{1}{2} - \frac{1}{l x \cdot \sqrt{x}} \right\} \frac{dx}{l x} = \frac{1}{2} (l 2 - 1)$ V. T. 80, N. 19.
- 18) $\int \left\{ \left(\frac{1}{l x} - \frac{1}{2} \right) \sqrt{x} + \left(\frac{1}{2} + \frac{1}{1-x} \right) x \right\} \frac{dx}{x l x} = \frac{1}{2} l 2 \pi - \frac{1}{2}$ V. T. 94, N. 27.
- 19) $\int \left\{ \frac{1}{2} - \frac{1}{1+\sqrt{x}} \right\} \frac{dx}{l x} = \frac{1}{2} l \frac{4}{\pi}$ V. T. 94, N. 5.
- 20) $\int \left\{ \frac{1}{1-x} - \frac{x}{1-x^2} + \frac{1}{l x \cdot \sqrt{x}} - \frac{1}{2 l x} \right\} \frac{dx}{l x} = 0$ V. T. 94, N. 23.

F. Alg. irrat. fract.;
Log. en dén.

TABLE 132, suite.

Lim. 0 et 1.

$$21) \int \left\{ \frac{b}{l^a} + \frac{x^{q-1}}{1-\sqrt{x}} \right\} dx = b l b - b Z'(bq) \text{ (IV, 247).}$$

$$22) \int \left\{ \frac{a-1}{2} + \frac{a-1}{1-x} + \frac{x^{p-1}}{1-\sqrt{\frac{1}{x}}} + \frac{x^{a,p}}{1-x} \right\} \frac{dx}{l^a} = \left(ap + \frac{1}{2} \right) la - \frac{1}{2}(a-1) l 2\pi \text{ V. T. 94, N. 14.}$$

$$23) \int \left\{ \left(p - \frac{1}{2} \right) x + \left(\frac{1}{2} - \frac{1}{l^a} \right) \left(x^{p-1} - \sqrt{\frac{1}{x}} \right) \right\} \frac{dx}{l^a} = \left(\frac{1}{2} - p \right) (lp - 1) \text{ V. T. 89, N. 22.}$$

$$24) \int \left\{ \frac{x^{q-1}}{1-x} - \frac{x^{p,q-1} + (p-1)x^{1,p-1}}{1-x^p} \right\} \frac{dx}{l^a} = \frac{1}{2}(1-p) l 2 + \left(pq - \frac{1}{2} \right) lp \text{ (IV, 247).}$$

F. Alg. rat.;

Log. en dén. sous forme irrat.

TABLE 133.

Lim. 0 et 1.

$$1) \int \frac{x^{p-1}}{\sqrt{l^{\frac{1}{x}}}} dx = \sqrt{\frac{\pi}{p}} \text{ (VIII, 542).}$$

$$2) \int \frac{1}{\sqrt{l^{\frac{1}{x}}}} \frac{dx}{1+x^2} = \sqrt{\pi} \cdot \sum_0^{\infty} \frac{(-1)^n}{\sqrt{2n+1}} \text{ V. T. 98, N. 25.}$$

$$3) \int \frac{1}{\sqrt{l^{\frac{1}{x}}}} \frac{dx}{1+x+x^2} = \operatorname{Cosec} \frac{1}{3}\pi \cdot \sqrt{\pi} \cdot \sum_1^{\infty} \frac{(-1)^{n-1}}{\sqrt{n}} \sin \frac{1}{3}n\pi \text{ V. T. 98, N. 26.}$$

$$4) \int \frac{x^{p-1} - x^{q-1}}{\left(l^{\frac{1}{x}} \right)^{1-\frac{1}{a}}} dx = \frac{a\Gamma\left(\frac{1}{a}\right)}{a-1} \left(q^{1-\frac{1}{a}} - p^{1-\frac{1}{a}} \right) [q > p > 0] \text{ V. T. 98, N. 21.}$$

$$5) \int \frac{\sin \lambda - x^a \sin \{(a+1)\lambda\} + x^{a+1} \sin a\lambda}{1-2x \cos \lambda + x^2} \frac{dx}{\sqrt{l^{\frac{1}{x}}}} = \sqrt{\pi} \cdot \sum_1^a \frac{\sin n\lambda}{\sqrt{n}} \text{ (VIII, 476).}$$

$$6) \int \frac{\cos \lambda - x - x^{a-1} \cos a\lambda + x^a \cos \{(a-1)\lambda\}}{1-2x \cos \lambda + x^2} \frac{dx}{\sqrt{l^{\frac{1}{x}}}} = \sqrt{\pi} \cdot \sum_1^{a-1} \frac{\cos n\lambda}{\sqrt{n}} \text{ (VIII, 476).}$$

F. Alg. rat. fract. à dén. mon.;
Log. en num. [$p < 1$].

TABLE 134.

Lim. 0 et ∞ .

$$1) \int l(1+x) \frac{dx}{x^{1-p}} = \frac{\pi}{1-p} \operatorname{Cosec} p\pi \text{ V. T. 17, N. 10.}$$

$$2) \int l(1+x) \frac{dx}{x^{1+p}} = \frac{\pi}{p} \operatorname{Cosec} p\pi \text{ V. T. 18, N. 1.}$$

$$3) \int l(1+qx) \frac{dx}{x^{1-p}} = \frac{\pi}{(1-p)q^{p-1}} \operatorname{Cosec} p\pi \text{ V. T. 16, N. 1.}$$

$$4) \int l(1-x) \frac{dx}{x^{1-p}} = \frac{\pi}{p-1} \operatorname{Cot} p\pi \text{ V. T. 17, N. 11.}$$

$$5) \int l(1+x^2) \frac{dx}{x^2} = \frac{2\pi}{\sqrt{3}} \text{ V. T. 17, N. 8.}$$

$$6) \int l(1+x^2) \frac{dx}{x^2} = \frac{\pi}{3} \sqrt{3} \text{ V. T. 17, N. 2.}$$

$$7) \int l(q^2-x^2) \frac{dx}{x^2} = \frac{\pi}{4q^2} \sqrt{3} \text{ V. T. 17, N. 4.}$$

$$8) \int l(1+x^4) \frac{dx}{x^2} = \pi \sqrt{2} \text{ V. T. 17, N. 6.}$$

$$9) \int l(1+x^4) \frac{dx}{x^2} = \frac{1}{8} \pi \sqrt{2} \text{ V. T. 17, N. 5.}$$

$$10) \int l(1+x^4) \frac{dx}{x^2} = 2\pi \text{ V. T. 17, N. 8.}$$

$$11) \int l(1+x^4) \frac{dx}{x^2} = \frac{2}{5} \pi \text{ V. T. 17, N. 7.}$$

$$12) \int l(1+x^r) \frac{dx}{x^{1+r}} = \frac{\pi}{r} \operatorname{Cosec} \frac{r\pi}{q} \text{ V. T. 17, N. 10.}$$

$$13) \int l(1-x^r) \frac{dx}{x^{1+r}} = -\frac{\pi}{r} \operatorname{Cot} \frac{r\pi}{q} \text{ V. T. 17, N. 11.}$$

$$14) \int l \left\{ \frac{(x+1)(x+q^2)}{(x+q)^2} \right\} \frac{dx}{x} = (lq)^2 [q > 1] \text{ (IV, 249).}$$

$$15) \int l \left\{ \frac{(1+x)^2}{1+2x \cos \lambda + x^2} \right\} \frac{dx}{x} = \lambda^2 [\lambda < \pi, q > 1] \text{ (VIII, 584).}$$

$$16) \int l \left\{ \frac{(x+1)(x+q^2)}{(x+q)^2} \right\} \frac{dx}{x^{1-p}} = \frac{\pi}{p} \operatorname{Cosec} p\pi \cdot (q^2-1)^2 [q > 1] \text{ (IV, 249).}$$

$$17) \int l \left\{ \frac{(x+1)^2}{1+2x \cos \lambda + x^2} \right\} \frac{dx}{x^{1-p}} = \frac{2\pi}{p} \operatorname{Cosec} p\pi \cdot (1-\cos p\lambda) [\lambda < \pi] \text{ (VIII, 584).}$$

$$18) \int l x \cdot l(1+q^2 x^2) \frac{dx}{x^2} = \pi q(1-lq) \text{ (VIII, 608).}$$

$$19) \int \{l(1+p^2 x^2)\}^2 \frac{dx}{x^2} = 4p\pi l2 \text{ (VIII, 607).}$$

$$20) \int l(1+q^2 x^2) \cdot l(1+r^2 x^2) \frac{dx}{x^2} = 2\pi \{(p+q)l(p+q) - p l p - q l q\} \text{ (VIII, 607).}$$

$$21) \int l(p^2+x^2) \cdot l(1+q^2 x^2) \frac{dx}{x^2} = 2\pi \left\{ \frac{1+pq}{p} l(1+pq) - q l q \right\} \text{ (VIII, 608).}$$

F. Alg. rat. fract. à dén. mon.; TABLE 134, suite.
Log. en num. $[p < 1]$.

Lim. 0 et ∞ .

$$22) \int l(1+q^2 x^2) \cdot l\left(r^2 + \frac{1}{x^2}\right) \frac{dx}{x^3} = 2\pi \{(q+r)l(q+r) - rlr - q\} \text{ (VIII, 608)}.$$

$$23) \int l\left(1 + \frac{x^2}{r^2}\right) \cdot l\left(1 + \frac{q^2}{x^2}\right) \frac{dx}{x^3} = 2\pi \frac{q+r}{qr} l\left(\frac{q+r}{r}\right) - \frac{2\pi}{r} \text{ (VIII, 608*)}.$$

$$24) \int lx \cdot l\left(\frac{1+p^2 x^2}{1+q^2 x^2}\right) \frac{dx}{x^3} = \pi(p-q) + \pi l \frac{q^2}{p^2} \text{ V. T. 33, N. 1.}$$

$$25) \int lx \cdot l\left(\frac{q^2 + 2rx + x^2}{q^2 - 2rx + x^2}\right) \frac{dx}{x} = 2\pi lq \cdot \text{Arcsin} \frac{r}{q} [q \geq r] \text{ (VIII, 559)}.$$

$$26) \int l(1-x^r) \cdot \{(q-r)lx + 1\} \frac{dx}{x^{1+r-q}} = -\frac{\pi^2}{r} \text{Cosec}^2 \frac{q\pi}{r} [q < r] \text{ V. T. 135, N. 8.}$$

F. Alg. rat. fract. à dén. bin.; TABLE 135.
Log. en num. $(lx)^a$.

Lim. 0 et ∞ .

$$1) \int lx \frac{x^{p-1} dx}{x+q} = \pi q^{p-1} \text{Cosec} p\pi \cdot (lq - \pi \text{Cot} p\pi) [p < 1] \text{ (IV, 250)}.$$

$$2) \int (lx)^{2n+1} \frac{dx}{1+x^2} = 0 \text{ (VIII, 285)}.$$

$$3) \int (lx)^{2n} \frac{dx}{1+x^2} = 2 \cdot l^{2n+1} \sum_{k=0}^{\infty} \frac{(-1)^k}{(2n+1)^{2k+1}} \text{ (VIII, 285)}.$$

$$4) \int l(px) \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} lpq \text{ (VIII, 456)}.$$

$$5) \int lx \frac{dx}{p^2 + q^2 x^2} = \frac{\pi}{2pq} l \frac{p}{q} \text{ (VIII, 274)}.$$

$$6) \int lx \frac{dx}{p^2 - q^2 x^2} = -\frac{q}{4p} \pi^2 \text{ (VIII, 285*)}.$$

$$7) \int lx \frac{x^{p-1} dx}{1+x^q} = -\left(\frac{\pi}{q}\right)^2 \text{Cos} \frac{p\pi}{q} \cdot \text{Cosec}^2 \frac{p\pi}{q} [p^2 < q^2] \text{ (VIII, 486)}.$$

$$8) \int lx \frac{x^{p-1} dx}{1-x^q} = -\left(\frac{\pi}{q}\right)^2 \text{Cosec}^2 \frac{p\pi}{q} \text{ (VIII, 485)}.$$

$$9) \int lx \frac{1-x^p}{1-x^2} dx = \frac{1}{4} \pi^2 \text{Tg}^2 \frac{1}{2} p\pi \text{ V. T. 135, N. 8.}$$

$$10) \int lx \frac{1-x}{1-x^{2a}} x^{a-1} dx = -\left(\frac{\pi}{2a} \text{Tg} \frac{\pi}{2a}\right)^2 [a > 1] \text{ (IV, 251)}.$$

$$11) \int lx \frac{1-x^2}{1-x^{2a}} x^{a-1} dx = -\left(\frac{\pi}{2a} \text{Tg} \frac{\pi}{a}\right)^2 [a > 2] \text{ (IV, 251)}.$$

$$12) \int lx \frac{1-x^2}{1-x^{2b}} x^{a-1} dx = -\left(\frac{\pi}{2b}\right)^2 \operatorname{Cosec}^2 \frac{a\pi}{2b} \operatorname{Cosec}^2 \left(\frac{a+2}{2b}\pi\right) \sin\left(\frac{a+1}{b}\pi\right) \sin \frac{\pi}{b} \text{ (IV, 251).}$$

$$13) \int (lx)^2 \frac{1+x^2}{1+x^4} dx = \frac{3\sqrt{2}}{32} \pi^2 \text{ (VIII, 568).}$$

$$1) \int l(1+x) \frac{dx}{1+x^2} = \frac{\pi}{4} l2 + \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ (VIII, 534).}$$

$$2) \int l(1-x)^2 \frac{dx}{1+x^2} = \frac{\pi}{2} l2 + 2 \sum_0^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2} \text{ V. T. 114, N. 17 et T. 115, N. 5.}$$

$$3) \int l(1+x^2) \frac{dx}{1+x^2} = \pi l2 \text{ (VIII, 604*)} \quad 4) \int l(1+x^2) \frac{dx}{1-x^2} = -\frac{1}{4} \pi^2 \text{ (VIII, 278).}$$

$$5) \int l(1-x^2)^2 \frac{dx}{1+x^2} = \pi l2 \text{ V. T. 136, N. 1, 2.}$$

$$6) \int l(1+x^2) \frac{dx}{1+x^2} = \frac{1}{9} \pi^2 - \frac{\pi}{\sqrt{3}} l3 \text{ V. T. 138, N. 13.}$$

$$7) \int l(1+x^2) \frac{x dx}{1+x^2} = -\frac{1}{9} \pi^2 - \frac{\pi}{\sqrt{3}} l3 \text{ V. T. 138, N. 12.}$$

$$8) \int l(1+x^2) \frac{dx}{1-x+x^2} = -\frac{2\pi}{\sqrt{3}} l3 \text{ V. T. 138, N. 14.}$$

$$9) \int l(1+x^2) \frac{1-x}{1+x^2} dx = \frac{2}{9} \pi^2 \text{ V. T. 138, N. 15.}$$

$$10) \int l(1-x^4)^2 \frac{dx}{1+x^2} = 3\pi l2 \text{ V. T. 136, N. 3, 5.}$$

$$11) \int l(1+p^2 x^2) \frac{dx}{q^2+x^2} = \frac{\pi}{q} l(1+pq) \text{ (VIII, 604).}$$

$$12) \int l(1+p^2 x^2) \frac{dx}{1+q^2 x^2} = \frac{\pi}{q} l \frac{p+q}{q} \text{ (VIII, 604).}$$

$$13) \int l(p^2+x^2) \frac{dx}{q^2+x^2} = \frac{\pi}{q} l(p+q) \text{ (VIII, 604).}$$

$$14) \int l(p^2+x^2) \frac{dx}{1+q^2 x^2} = \frac{\pi}{q} l \frac{1+pq}{q} \text{ (VIII, 604).}$$

F. Alg. rat. fract. à dén. bin.;

Log. en num. d'autre forme ent.

TABLE 136, suite.

Lim. 0 et ∞ .

$$15) \int l(p^2 + x^2) \frac{dx}{q^2 - x^2} = -\frac{\pi}{q} \operatorname{Arctg} \frac{q}{p} \text{ V. T. 135, N. 6 et T. 138, N. 11.}$$

$$16) \int l(p^2 - x^2)^2 \frac{dx}{q^2 + x^2} = \frac{\pi}{q} l(p^2 + q^2) \text{ V. T. 248, N. 10.}$$

$$17) \int l(p^2 - x^2)^2 \frac{dx}{q^2 + x^2} = \frac{\pi}{q} l\{(p^2 + q^2)(p + q)^2\} \text{ V. T. 248, N. 11.}$$

F. Alg. rat. fract. à dén. binôme;

Log. en num. de fonct. fract. à dén. x .

TABLE 137.

Lim. 0 et ∞ .

$$1) \int l\left(\frac{1+x^2}{x}\right) \frac{x^{2a-1} dx}{1+x} = \frac{1}{2a} l2 + \frac{1}{4a^2} - \frac{1}{2a} \sum_{n=0}^{\infty} \frac{(-1)^n}{2a+n+1} \text{ (VIII, 422).}$$

$$2) \int l\left(\frac{1+x^2}{x}\right) \frac{x^{2a-1} dx}{1-x} = \frac{1}{2a} l2 + \frac{1}{4a^2} - \frac{1}{2a} \sum_{n=0}^{\infty} \frac{(-1)^n}{2a+n+1} \text{ (VIII, 422).}$$

$$3) \int l\left(\frac{1+x^2}{x}\right) \frac{x^{2a} dx}{1+x} = \frac{1}{4a^2} \left\{ 2a l2 + 1 + 2a \sum_{n=0}^{\infty} \frac{(-1)^{n-1}}{2a+n+1} \right\} \text{ (VIII, 422).}$$

$$4) \int l\left(\frac{1+x^2}{x}\right) \frac{x^{2a} dx}{1-x} = \frac{1}{4a^2} \left\{ -1 - 2a l2 + 2a \sum_{n=0}^{\infty} \frac{(-1)^n}{2a+n+1} \right\} \text{ (VIII, 422).}$$

$$5) \int l\left(\frac{1+x}{x}\right) \frac{dx}{1+x^2} = \frac{\pi}{4} l2 + \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 135, N. 2 et T. 136, N. 1.}$$

$$6) \int l\left\{\frac{(1+x)^2}{x}\right\} \frac{dx}{1+x^2} = \frac{\pi}{2} l2 + 2 \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ (VIII, 534).}$$

$$7) \int l\left\{\frac{(1-x)^2}{x}\right\} \frac{dx}{1+x^2} = \frac{\pi}{2} l2 + 2 \sum_{n=0}^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2} \text{ V. T. 135, N. 2 et T. 136, N. 2.}$$

$$8) \int l\left(\frac{1+x^2}{x}\right) \frac{dx}{1+x^2} = \pi l2 \text{ V. T. 135, N. 2 et T. 136, N. 13.}$$

$$9) \int l\left(\frac{1+x^2}{x}\right) \frac{dx}{1-x^2} = 0 \text{ (VIII, 278).}$$

$$10) \int l\left(\frac{1+x^2}{x}\right) \frac{x^{2a-1} dx}{1+x^2} = \frac{1}{2a} l2 + \frac{1}{4a^2} + \frac{1}{2a} \sum_{n=0}^{\infty} \frac{(-1)^{n-1}}{2a+n+1} \text{ (VIII, 422).}$$

$$11) \int l\left(\frac{1+x^2}{x}\right) \frac{x^{2a-1} dx}{1-x^2} = \frac{1}{2a} l2 + \frac{1}{4a^2} + \frac{1}{2a} \sum_{n=0}^{\infty} \frac{(-1)^{n-1}}{2a+n+1} \text{ (VIII, 422).}$$

$$12) \int l\left(\frac{1+x^2}{x}\right) \frac{x^{2a-1} dx}{1-x^2} = \frac{1}{2a} l2 + \frac{1}{4a^2} - \frac{1}{2a} \sum_{n=0}^{\infty} \frac{(-1)^n}{2a+n+1} \text{ (VIII, 422).}$$

$$1) \int \ln \left\{ \frac{(1-x)^2}{x^2} \right\} \frac{dx}{1+x^2} = \frac{\pi}{2} \ln 2 + 2 \sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2} \quad \text{V. T. 135, N. 2 et T. 136, N. 2.}$$

$$2) \int \ln \left(\frac{1+x^2}{x^2} \right) \frac{dx}{1+x^2} = \pi \ln 2 \quad \text{V. T. 135, N. 2 et T. 136, N. 13.}$$

$$3) \int \ln \left(\frac{1+x^2}{x^2} \right) \frac{x dx}{1+x^2} = \frac{1}{12} \pi^2 \quad (\text{VIII, 291}).$$

$$4) \int \ln \left\{ \frac{(1-x^2)^2}{x^2} \right\} \frac{dx}{1+x^2} = \pi \ln 2 \quad \text{V. T. 135, N. 2 et T. 136, N. 5.}$$

$$5) \int \ln \left\{ \frac{(1-x^4)^2}{x^2} \right\} \frac{dx}{1+x^2} = 3\pi \ln 2 \quad \text{V. T. 135, N. 2 et T. 136, N. 10.}$$

$$6) \int \ln \left(\frac{1+p^2 x^2}{x^2} \right) \frac{dx}{q^2+x^2} = \frac{\pi}{q} \ln \frac{1+pq}{q} \quad (\text{VIII, 604}).$$

$$7) \int \ln \left(\frac{1+p^2 x^2}{x^2} \right) \frac{dx}{1+q^2 x^2} = \frac{\pi}{q} \ln(p+q) \quad (\text{VIII, 604}).$$

$$8) \int \ln \left(\frac{1+p^2 x^2}{x^2} \right) \frac{dx}{q^2-x^2} = \frac{\pi}{q} \operatorname{Arccot} pq \quad (\text{VIII, 360}).$$

$$9) \int \ln \left(\frac{p^2+x^2}{x^2} \right) \frac{dx}{1+q^2 x^2} = \frac{\pi}{q} \ln(1+pq) \quad (\text{VIII, 604}).$$

$$10) \int \ln \left(\frac{p^2+x^2}{x^2} \right) \frac{dx}{q^2+x^2} = \frac{\pi}{q} \ln \frac{p+q}{q} \quad (\text{VIII, 604}).$$

$$11) \int \ln \left(\frac{p^2+x^2}{x^2} \right) \frac{dx}{q^2-x^2} = \frac{\pi}{q} \operatorname{Arctg} \frac{p}{q} \quad (\text{VIII, 360}).$$

$$12) \int \ln \left(\frac{1+x^2}{x^2} \right) \frac{dx}{1+x^2} = \frac{\pi}{\sqrt{3}} \ln 3 + \frac{1}{9} \pi^2 \quad (\text{IV, 258*}).$$

$$13) \int \ln \left(\frac{1+x^2}{x^2} \right) \frac{x dx}{1+x^2} = \frac{\pi}{\sqrt{3}} \ln 3 - \frac{1}{9} \pi^2 \quad (\text{IV, 258*}).$$

$$14) \int \ln \left(\frac{1+x^2}{x^2} \right) \frac{dx}{1-x+x^2} = \frac{2\pi}{\sqrt{3}} \ln 3 \quad \text{V. T. 138, N. 12, 13.}$$

$$15) \int \ln \left(\frac{1+x^2}{x^2} \right) \frac{1-x}{1+x^2} dx = \frac{2}{9} \pi^2 \quad \text{V. T. 138, N. 12, 13.}$$

$$16) \int \ln \left\{ \frac{(1-x^2)^2}{x^2} \right\} \frac{dx}{1+x^2} = \pi \ln 2 \quad \text{V. T. 135, N. 2 et T. 136, N. 5.}$$

$$17) \int \ell \left\{ \frac{(1-x^4)^2}{x^4} \right\} \frac{dx}{1+x^2} = 3\pi \ell 2 \text{ V. T. 135, N. 2 et T. 136, N. 10.}$$

$$18) \int \ell \left\{ \frac{(1-x^4)^2}{x^4} \right\} \frac{dx}{1+x^2} = 3\pi \ell 2 \text{ V. T. 135, N. 2 et T. 136, N. 10.}$$

$$19) \int \ell \left\{ \frac{(1-x^4)^2}{x^4} \right\} \frac{dx}{1+x^2} = 3\pi \ell 2 \text{ V. T. 135, N. 2 et T. 136, N. 10.}$$

$$20) \int \ell (x^2 + x^{-2}) \frac{dx}{1-x^2} = 0 \text{ (VIII, 278).}$$

$$21) \int \ell \left(\frac{1+x}{1-x} \right)^2 \frac{dx}{1+x^2} = 4 \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 136, N. 1, 2.}$$

$$22) \int \ell \frac{1+x^2}{1+x} \frac{dx}{1+x^2} = \frac{3\pi}{4} \ell 2 + \sum_{n=0}^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2} \text{ V. T. 136, N. 1, 13.}$$

$$23) \int \ell \left(\frac{1+x^2}{1-x} \right)^2 \frac{dx}{1+x^2} = \frac{3\pi}{2} \ell 2 + 2 \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 136, N. 2, 13.}$$

$$24) \int \ell \left(\frac{1+x^2}{1-x^2} \right)^2 \frac{dx}{1+x^2} = \pi \ell 2 \text{ V. T. 136, N. 5, 13.}$$

$$25) \int \ell \left(\frac{1+x}{1-x} \right)^2 \frac{x dx}{1+x^2} = \frac{1}{2} \pi^2 \text{ V. T. 315, N. 15.}$$

$$26) \int \ell \left(\frac{r^2+x^2}{p^2+x^2} \right) \frac{dx}{q^2+x^2} = \frac{\pi}{q} \ell \frac{1+qr}{1+pq} \text{ (VIII, 291*)}.$$

$$1) \int \ell x \frac{dx}{(q+x)^2} = \frac{1}{q} \ell q [q < 1] \text{ V. T. 139, N. 7.}$$

$$2) \int \ell x \frac{dx}{(q+x)^{p+1}} = \frac{1}{pq^p} \{ \ell q - A - Z'(p) \} = \frac{1}{pq^p} \left\{ \ell q - \sum_{n=1}^{p-1} \frac{1}{n} \right\} [p \text{ entier}] \text{ (IV, 252).}$$

$$3) \int \ell x \frac{dx}{(q^2+r^2x^2)^p} = \frac{\Gamma(p-\frac{1}{2})}{4q^{2p-1}r\Gamma(p)} \sqrt{\pi} \cdot \left\{ 2\ell \frac{q}{2r} - A - Z'\left(p-\frac{1}{2}\right) \right\} \text{ (IV, 252).}$$

$$4) \int (\ell x)^2 \frac{dx}{(1-x)^2} = \frac{2}{3} \pi^2 \text{ (IV, 252).}$$

$$5) \int \ell (1+x) \frac{dx}{(px+q)^2} = \frac{1}{p(p-q)} \ell \frac{p}{q} \text{ (VIII, 591).}$$

- 6) $\int l(p+x) \frac{dx}{(q-x)^2} = \frac{1}{p+q} l \frac{p}{q} - \frac{1}{q} l p$ V. T. 139, N. 8.
- 7) $\int l(p-x)^2 \frac{dx}{(q+x)^2} = \frac{2}{p+q} \left\{ l q + \frac{p}{q} l p \right\}$ V. T. 139, N. 8.
- 8) $\int l(px+q) \frac{dx}{(1+x)^2} = \frac{1}{p-q} \{ p l p - q l q \}$ (VIII, 591).
- 9) $\int l(p+x) \frac{x dx}{(q^2+x^2)^2} = \frac{1}{2(p^2+q^2)} \left\{ l q + \frac{p\pi}{2q} + \frac{p^2}{q^2} l p \right\}$ (VIII, 590).
- 10) $\int l(p-x)^2 \frac{x dx}{(q^2+x^2)^2} = \frac{1}{p^2+q^2} \left\{ l q - \frac{p\pi}{2q} + \frac{p^2}{q^2} l p \right\}$ (VIII, 591).
- 11) $\int l(p+x) \frac{q^2-x^2}{(q^2+x^2)^2} dx = \frac{1}{p^2+q^2} \left\{ p l \frac{q}{p} - \frac{1}{2} q \pi \right\}$ (IV, 253*).
- 12) $\int l(p-x)^2 \frac{q^2-x^2}{(q^2+x^2)^2} dx = \frac{2}{p^2+q^2} \left\{ p l \frac{p}{q} - \frac{1}{2} q \pi \right\}$ (IV, 253*).
- 13) $\int l(1+x) \frac{1+x^2}{(1+x)^4} dx = \frac{1}{2}$ V. T. 139, N. 14.
- 14) $\int l(1+x) \frac{1+x^2}{(px+q)^2} \frac{dx}{(p+qx)^2} = \frac{1}{pq(p^2-q^2)} l \frac{p}{q}$ V. T. 139, N. 5.
- 15) $\int l(1+x^2) \frac{dx}{(1+x^2)^2} = \frac{\pi}{2} \left(l 2 - \frac{1}{2} \right)$ (VIII, 292).
- 16) $\int l(p^2+x^2) \frac{dx}{(q+x)^2} = \frac{1}{p^2+q^2} \left\{ p\pi + 2q l q + \frac{2p^2}{q} l p \right\}$ (VIII, 590).
- 17) $\int l(p^2+x^2) \frac{dx}{(q-x)^2} = \frac{1}{p^2+q^2} \left\{ p\pi - 2q l q - \frac{2p^2}{q} l p \right\}$ (VIII, 591).
- 18) $\int l(p^2+x^2) \frac{q^2-x^2}{(q^2+x^2)^2} dx = -\frac{\pi}{p+q}$ (IV, 253).
- 19) $\int l(p^2+x^2) \frac{q^2+x^2}{(q^2-x^2)^2} dx = \frac{p\pi}{p^2+q^2}$ (IV, 253).
- 20) $\int l(p^2-x^2)^2 \frac{q^2-x^2}{(q^2+x^2)^2} dx = -\frac{2q\pi}{p^2+q^2}$ (IV, 253).
- 21) $\int l\left(\frac{1+x^2}{x^2}\right) \frac{x^2 dx}{(1+x^2)^2} = \frac{\pi}{4} (2 l 2 - 1)$ (VIII, 292).

$$22) \int l \left(\frac{p+x}{p-x} \right)^2 \frac{x dx}{(q^2+x^2)^2} = \frac{p}{p^2+q^2} \frac{\pi}{q} \text{ (IV, 253).}$$

$$23) \int l \left(\frac{px+q}{qx+p} \right) \frac{dx}{(1+x)^2} = 0 \text{ V. T. 139, N. 8.}$$

$$1) \int lx \frac{x^p dx}{(1-x)x} = -\pi^2 \operatorname{Cosec}^2 p\pi [p < 1] \text{ (IV, 254).}$$

$$2) \int \frac{lx}{x^r-1} \frac{dx}{x^2} = \left\{ \frac{\pi}{r} \operatorname{Cosec} \left(\frac{p-1}{r} \pi \right) \right\}^2 \text{ V. T. 135, N. 8.}$$

$$3) \int lx \frac{1-x^p}{1-x^2} dx = \left(\frac{1}{2} \pi \operatorname{Tg} \frac{1}{2} p\pi \right)^2 \text{ (IV, 254).}$$

$$4) \int lx \cdot \left(\frac{x^p}{1+x^{2p}} \right)^q \frac{dx}{x} = 0 =$$

$$5) \int lx \cdot \left(\frac{x^p}{1+x^{2p}} \right)^q \frac{dx}{1+x^2} \text{ (VIII, 272).}$$

$$6) \int lx \cdot \left(\frac{x}{q^2+x^2} \right)^p \frac{dx}{x} = \frac{1}{2} q^{-p} lq \frac{\{\Gamma(\frac{1}{2}p)\}^2}{\Gamma(p)} \text{ (VIII, 272).}$$

$$7) \int l \frac{x}{q} \cdot \left(\frac{x}{q^2+x^2} \right)^p \frac{dx}{x} = 0 \text{ (VIII, 272).}$$

$$8) \int \frac{lx}{x+q} \frac{dx}{x+1} = \frac{1}{2(q-1)} (lq)^2 \text{ (IV, 254).}$$

$$9) \int \frac{lx}{x+q} \frac{x^p}{x+1} dx = \frac{\pi}{q-1} \operatorname{Cosec}^2 p\pi \cdot \{q^p \operatorname{Sin} p\pi \cdot lq + (1-q^p) \pi \operatorname{Cos} p\pi\} \text{ (IV, 254).}$$

$$10) \int \frac{lx}{x+q} \frac{dx}{x-1} = \frac{1}{2(1+q)} \{\pi^2 + (lq)^2\} \text{ (VIII, 579).}$$

$$11) \int \frac{lx}{x+q} \frac{x^p dx}{x-1} = \frac{\pi}{1+q} \operatorname{Cosec}^2 p\pi \cdot \{\pi + q^p (\operatorname{Sin} p\pi \cdot lq - \pi \operatorname{Cos} p\pi)\} \text{ (VIII, 579).}$$

$$12) \int \frac{lx}{x^2+q^2} \frac{dx}{1+p^2 x^2} = -\frac{\pi}{2pq(1-p^2 q^2)} lp \text{ V. T. 135, N. 4, 5.}$$

$$13) \int lx \frac{q+x^2}{p^2+x^2} \frac{dx}{1+x^2} = \frac{\pi}{4} \frac{1+q}{p} lp \text{ V. T. 321, N. 15, 16.}$$

$$14) \int (lx)^{q-1} \frac{x^p dx}{1-2rx \operatorname{Cos} \lambda + r^2 x^2} = (-1)^{q-1} \frac{1}{r} \operatorname{Cosec} \lambda \cdot \Gamma(q) \sum_0^\infty \frac{r^n}{(p+n)^q} \operatorname{Sin} n\lambda \text{ (VIII, 514).}$$

F. Alg. rat. fract. à autre dén.;
Log. en num. $l x$.

TABLE 140, suite.

Lim 0 et ∞ .

$$15) \int (l x)^{q-1} \frac{1 - r x \cos \lambda}{1 - 2 r x \cos \lambda + r^2 x^2} x^{p-1} dx = (-1)^{q-1} \Gamma(q) \sum_{n=0}^{\infty} \frac{r^n}{(p+n)^q} \cos n \lambda \quad (\text{VIII}, 514).$$

$$16) \int (l x)^{2a+1} \frac{dx}{1 - 2 x \cos \lambda + x^2} = 0 \quad \text{De Morgan, Int. Calc.}$$

F. Alg. rat. fract. à autre dén.;
Log. en num. d'autre forme.

TABLE 141.

Lim. 0 et ∞ .

$$1) \int (l x)^2 \frac{dx}{(x-1)(x+q)} = \frac{1}{3(1+q)} l q \cdot \{\pi^2 + (l q)^2\} \quad (\text{VIII}, 579).$$

$$2) \int (l x)^3 \frac{dx}{(x-1)(x+q)} = \frac{1}{4(1+q)} \{\pi^2 + (l q)^2\}^2 \quad (\text{VIII}, 580).$$

$$3) \int (l x)^4 \frac{dx}{(x-1)(x+q)} = \frac{1}{15(1+q)} l q \cdot \{\pi^2 + (l q)^2\}^2 \{7\pi^2 + 3(l q)^2\} \quad (\text{VIII}, 580).$$

$$4) \int (l x)^5 \frac{dx}{(x-1)(x+q)} = \frac{1}{6(1+q)} \{\pi^2 + (l q)^2\}^3 \{3\pi^2 + (l q)^2\} \quad (\text{VIII}, 580).$$

$$5) \int l x \cdot l \frac{x}{q} \frac{dx}{(x-1)(x-q)} = \frac{1}{6(q-1)} l q \cdot \{4\pi^2 + (l q)^2\} [p^2 < 1, q > 1] \quad (\text{IV}, 255).$$

$$6) \int l x \cdot l \frac{x}{q} \frac{x^p}{x-1} \frac{dx}{x-q} = \frac{\pi^2}{q-1} \operatorname{Cosec}^2 p \pi \cdot \{(q^p + 1) l q - 2 \pi (q^p - 1) \cot p \pi\} [p^2 < 1, q > 1] \\ (\text{IV}, 255).$$

$$7) \int l(1+x) \frac{x l x - x - q}{(x+q)^2} \frac{dx}{x} = \frac{1}{2(q-1)} (l q)^2 \quad \text{V. T. 140, N. 8.}$$

$$8) \int l(1-x) \frac{x l x - x - q}{(x+q)^2} \frac{dx}{x} = \frac{-1}{1+q} \{\pi^2 + (l q)^2\} \quad \text{V. T. 140, N. 10.}$$

$$9) \int l(1+x^2) \frac{dx}{x(1+x^2)} = \frac{1}{12} \pi^2 \quad (\text{VIII}, 291).$$

$$10) \int l(1+p^2 x^2) \frac{1}{q^2 + r^2 x^2} \frac{dx}{s^2 + t^2 x^2} = \frac{\pi}{q^2 t^2 - s^2 r^2} \left\{ \frac{t}{s} l \left(1 + \frac{p s}{t} \right) - \frac{r}{q} l \left(1 + \frac{p q}{r} \right) \right\} \quad (\text{VIII}, 331).$$

$$11) \int l(1+p^2 x^2) \frac{x^2}{q^2 + r^2 x^2} \frac{dx}{s^2 + t^2 x^2} = \frac{\pi}{q^2 t^2 - s^2 r^2} \left\{ \frac{q}{r} l \left(1 + \frac{p q}{r} \right) - \frac{s}{t} l \left(1 + \frac{p s}{t} \right) \right\} \quad (\text{VIII}, 331).$$

$$12) \int l \left(\frac{q^2 + x^2}{x^2} \right) \frac{(r - x i)^{-p} + (r + x i)^{-p}}{2} dx = \frac{\pi}{p-1} \left\{ \left(\frac{1}{r} \right)^{p-1} - \left(\frac{1}{q+r} \right)^{p-1} \right\} \quad (\text{VIII}, 581).$$

$$13) \int l \left(\frac{1+x}{1-x} \right)^2 \frac{dx}{x(1+x^2)} = \frac{1}{2} \pi^2 \quad (\text{VIII}, 286).$$

F. Alg. irrat. fract.;
Log. en num.

TABLE 142.

Lim. 0 et ∞ .

- 1) $\int \imath x \frac{1-x}{(1+x)^2} \frac{dx}{\sqrt{x}} = -2\pi$ V. T. 139, N. 11. 2) $\int \imath x \frac{1+x}{(1-x)^2} \frac{dx}{\sqrt{x}} = 0$ V. T. 139, N. 19.
- 3) $\int \imath x \frac{dx}{\sqrt{(1+x^2)\{1+(1-p^2)x^2\}}} = -\frac{1}{2}F'(p) \cdot \imath(1-p^2) [p^2 < 1]$ V. T. 322, N. 11.
- 4) $\int \imath x \frac{dx}{\sqrt{(1+x^2)\{x^2+(1-p^2)\}}} = \frac{1}{2}F'(p) \cdot \imath(1-p^2) [p^2 < 1]$ V. T. 322, N. 11.
- 5) $\int \imath x \frac{dx}{(q+x)^{b+\frac{1}{2}}} = \frac{2}{(2b-1)q^{b-\frac{1}{2}}} \left\{ \imath q + 2\imath 2 - \sum_{n=1}^{b-1} \frac{1}{n} - 2 \sum_{n=1}^{b-1} \frac{1}{n} \right\}$ (IV, 257).
- 6) $\int \imath x \frac{dx}{(1-x^2)^{\frac{1}{2}-a}} = -\frac{1^{a/2}}{2^{a+1}1^{a/2}} \frac{\pi}{2} \left\{ A + 2\imath 2 + Z'(a+1) \right\}$ V. T. 306, N. 8.
- 7) $\int \imath(1+x) \frac{dx}{x\sqrt{x}} = 2\pi$ V. T. 134, N. 12.
- 8) $\int \imath(1+x) \frac{dx}{x^{p+\frac{1}{2}}} = \frac{2}{2p+1} \pi \operatorname{Sec} p\pi \left(p^2 < \frac{1}{4} \right)$ V. T. 134, N. 12.
- 9) $\int \imath(1-x)^2 \frac{dx}{x\sqrt{x}} = 0$ V. T. 134, N. 13.
- 10) $\int \imath \left(\frac{1 - \operatorname{Coth} p^2 \lambda + x^2}{1 + \operatorname{Coth} p^2 \lambda + x^2} \right) \frac{x}{1 + (1 - \operatorname{Cosh} p^2 \lambda)x^2} \frac{dx}{\sqrt{1+x^2}} = \frac{2\lambda \imath \operatorname{Sin} h p \lambda}{\operatorname{Sin} h p \lambda \cdot \operatorname{Cosh} p}$ V. T. 318, N. 7.
- 11) $\int \imath \left(\frac{\sqrt{1+x^2} + p}{\sqrt{1+x^2} - p} \right) \frac{dx}{\sqrt{1+x^2}} = \pi \operatorname{Arcsin} p$ (VIII 291).
- 12) $\int \imath(p + \sqrt{x}) \frac{dx}{(q+x)^2} = \frac{1}{2(p^2+q)} \left\{ \imath q + \frac{p\pi}{\sqrt{q}} + \frac{2p^2}{q} \imath p \right\}$ V. T. 139, N. 9.
- 13) $\int \imath(p - \sqrt{x}) \frac{dx}{(q+x)^2} = \frac{1}{p^2+q} \left\{ \imath q - \frac{p\pi}{\sqrt{q}} + \frac{2p^2}{q} \imath p \right\}$ V. T. 139, N. 10.

F. Algébrique;
Logar. en dén.

TABLE 143.

Lim. 0 et ∞ .

- 1) $\int \frac{x^{p-1} - x^{q-1}}{1+x^{2q}} \frac{dx}{\imath x} = \imath T_g \frac{p\pi}{4q}$ V. T. 143, N. 2.
- 2) $\int \frac{x^{p-1} - x^{q-1}}{1+x^r} \frac{dx}{\imath x} = \imath \left(T_g \frac{p\pi}{2r} \cdot \operatorname{Cot} \frac{q\pi}{2r} \right)$ (VIII, 486).

$$3) \int \frac{x^{p-1} - x^{q-1}}{1 - x^{2q}} \frac{dx}{lx} = l \operatorname{Sin} \frac{p\pi}{2q} \text{ V. T. 143, N. 4.}$$

$$4) \int \frac{x^{p-1} - x^{q-1}}{1 - x^r} \frac{dx}{lx} = l \left(\operatorname{Sin} \frac{p\pi}{r} \cdot \operatorname{Cosec} \frac{q\pi}{r} \right) \text{ (VIII, 485).}$$

$$5) \int \frac{x^{p-1} - x^{q-1}}{1 + x^{2(2a+1)}} \frac{1+x^2}{lx} dx = l \left[\operatorname{Tg} \left\{ \frac{p\pi}{4(2a+1)} \right\} \cdot \operatorname{Tg} \left\{ \frac{p+2}{2a+1} \frac{\pi}{4} \right\} \cdot \operatorname{Cot} \left\{ \frac{q\pi}{4(2a+1)} \right\} \cdot \operatorname{Cot} \left\{ \frac{q+2}{2a+1} \frac{\pi}{4} \right\} \right]$$

$$6) \int \frac{x^{p-1} - x^{q-1}}{1 - x^{2a}} \frac{1-x^2}{lx} dx = l \left\{ \operatorname{Sin} \frac{p\pi}{2a} \cdot \operatorname{Sin} \left(\frac{q+2}{2a} \pi \right) \cdot \operatorname{Cosec} \frac{q\pi}{2a} \cdot \operatorname{Cosec} \left(\frac{p+2}{2a} \pi \right) \right\}$$

Sur 5) et 6) voyez Lindmann, Gr. 35, 475.

$$7) \int \left\{ \frac{(q-1)x}{(1+x)^2} - \frac{1}{1+x} + \frac{1}{(1+x)^q} \right\} \frac{dx}{x l(1+x)} = l \Gamma(q) \text{ (VIII, 586).}$$

$$8) \int l(1+x^q) \left\{ \frac{(p-q)x^p + \frac{1}{2} q x^{\frac{1}{2}q}}{lx} + \frac{x^{\frac{1}{2}q} - x^p}{(lx)^2} \right\} \frac{dx}{x^{q+1}} = q l \operatorname{Cot} \frac{p\pi}{2q} \text{ V. T. 143, N. 1.}$$

$$9) \int l(1+x^r) \cdot \left\{ \frac{(p-r)x^p - (q-r)x^q}{lx} + \frac{x^q - x^p}{(lx)^2} \right\} \frac{dx}{x^{r+1}} = r l \left(\operatorname{Tg} \frac{q\pi}{2r} \cdot \operatorname{Cot} \frac{p\pi}{2r} \right) \text{ V. T. 143, N. 2.}$$

$$10) \int l(1-x^r)^2 \cdot \left\{ \frac{(p-r)x^p - (q-r)x^q}{lx} + \frac{x^q - x^p}{(lx)^2} \right\} \frac{dx}{x^{r+1}} = 2 r l \left(\operatorname{Sin} \frac{p\pi}{r} \cdot \operatorname{Cosec} \frac{q\pi}{r} \right) \text{ V. T. 143, N. 4.}$$

$$1) \int (lx)^p \frac{dx}{x^2} = \Gamma(1+p) \text{ V. T. 30, N. 2.}$$

$$2) \int lx \frac{dx}{1+x^2} = \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 108, N. 10.}$$

$$3) \int l(1+x) \frac{dx}{1+x^2} = \frac{\pi}{8} l2 + \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ (VIII, 534).}$$

$$4) \int l(1-x)^2 \frac{dx}{1+x^2} = \frac{\pi}{4} l2 \text{ V. T. 115, N. 5.}$$

$$5) \int l(1+x^2) \frac{dx}{1+x^2} = \frac{\pi}{2} l2 + \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 115, N. 8.}$$

$$6) \int l(1-x^2)^2 \frac{dx}{1+x^2} = \frac{\pi}{2} l2 + 2 \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 115, N. 10.}$$

- 7) $\int l(1-x^2)^2 \frac{dx}{1+x^2} = \frac{3\pi}{2} l2 + 4 \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 115, N. 14.
- 8) $\int l\left(\frac{1+x^2}{1+x}\right) \frac{dx}{1+x^2} = \frac{3\pi}{8} l2$ V. T. 115, N. 18 et T. 144, N. 1.
- 9) $\int l\left(\frac{1+x^2}{1-x}\right)^2 \frac{dx}{1+x^2} = \frac{3\pi}{4} l2 + 2 \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 115, N. 19 et T. 144, N. 1.
- 10) $\int \frac{dx}{x^{p+1} \sqrt{lx}} = \sqrt{\frac{\pi}{p}}$ V. T. 133, N. 1.
- 11) $\int \frac{1}{q+lx} \frac{dx}{x^{p+1}} = -e^{pq} Ei(-pq)$ V. T. 91, N. 1.
- 12) $\int \frac{1}{q-lx} \frac{dx}{x^{p+1}} = e^{pq} Ei(pq)$ V. T. 91, N. 4.
- 13) $\int \frac{1}{q^2+(lx)^2} \frac{dx}{x^{p+1}} = \frac{1}{q} \left\{ Ci(pq) \cdot Sin pq - Si(pq) \cdot Cos pq + \frac{1}{2} \pi Cos pq \right\}$ V. T. 91, N. 7.
- 14) $\int \frac{lx}{q^2+(lx)^2} \frac{dx}{x^{p+1}} = -Ci(pq) \cdot Cos pq - Si(pq) \cdot Sin pq + \frac{1}{2} \pi Sin pq$ V. T. 91, N. 8.
- 15) $\int \frac{1}{q^2-(lx)^2} \frac{dx}{x^{p+1}} = \frac{1}{2q} \{ e^{pq} Ei(pq) - e^{pq} Ei(-pq) \}$ V. T. 91, N. 14.
- 16) $\int \frac{lx}{q^2-(lx)^2} \frac{dx}{x^{p+1}} = \frac{1}{2} \{ e^{pq} Ei(pq) + e^{pq} Ei(-pq) \}$ V. T. 91, N. 15.
- 17) $\int lx \frac{dx}{x^2 \sqrt{x^2-1}} = 1-l2$ V. T. 118, N. 4.

- 1) $\int_0^{1/2} \frac{lx \cdot dx}{\sqrt{1-x^2}} = -\frac{1}{4} \pi l2 + \frac{1}{2} \sum_{n=0}^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2}$ V. T. 254, N. 11.
- 2) $\int_0^{1/2} l(1-x) \frac{dx}{x} = \frac{1}{2} (l2)^2 - \frac{1}{12} \pi^2$ (VIII, 268).
- 3) $\int_0^{1/2} l(1-x) \frac{dx}{x} = -\frac{1}{4} \pi^2 + \pi i l2$ (VIII, 269).
- 4) $\int_0^{1/2} \frac{dx \sqrt{x}}{x \sqrt{-(1+lx)}} = \frac{\sqrt{q\pi}}{\sqrt{e}}$ V. T. 104, N. 11.

$$5) \int_0^{\frac{1}{2}} \ell \left(2\ell \frac{1}{x} - 1 \right) \frac{x^{2q-1} dx}{\ell x} = -\frac{1}{2} \{Ei(-q)\}^2 \quad \text{V. T. 359, N. 1.}$$

$$6) \int_0^{\frac{1}{2}(1+\sqrt{5})} \ell(1-x) \frac{dx}{x} = -\frac{1}{10} \pi^2 + \frac{1}{5} \left\{ \ell \left(\frac{1+\sqrt{5}}{2} \right) \right\}^2 + \frac{2}{5} \ell \left(\frac{-1+\sqrt{5}}{2} \right) \cdot \ell \left(\frac{3-\sqrt{5}}{2} \right) \quad (\text{IV, 260}).$$

$$7) \int_0^{\frac{1}{2}(3-\sqrt{5})} \ell(1-x) \frac{dx}{x} = -\frac{1}{15} \pi^2 - \frac{1}{5} \left\{ \ell \left(\frac{1+\sqrt{5}}{2} \right) \right\}^2 + \frac{3}{5} \ell \left(\frac{1+\sqrt{5}}{2} \right) \cdot \ell \left(\frac{3-\sqrt{5}}{2} \right) \quad (\text{IV, 260}).$$

$$8) \int_0^{\frac{1}{2}(1-\sqrt{5})} \ell(1-x) \frac{dx}{x} = \frac{1}{15} \pi^2 - \frac{3}{10} \left\{ \ell \left(\frac{1+\sqrt{5}}{2} \right) \right\}^2 + \frac{2}{5} \ell \left(\frac{-1+\sqrt{5}}{2} \right) \cdot \ell \left(\frac{3-\sqrt{5}}{2} \right) + \\ + \ell \left(\frac{-1+\sqrt{5}}{2} \right) \cdot \ell \left(\frac{1+\sqrt{5}}{2} \right) \quad (\text{IV, 260}).$$

$$9) \int_0^{\frac{1}{2}(1+\sqrt{5})} \ell(1-x) \frac{dx}{x} = -\frac{7}{30} \pi^2 + \frac{3}{10} \left\{ \ell \left(\frac{1+\sqrt{5}}{2} \right) \right\}^2 - \frac{2}{5} \ell \left(\frac{-1+\sqrt{5}}{2} \right) \cdot \ell \left(\frac{3-\sqrt{5}}{2} \right) + \\ + \pi i \ell \left(\frac{1+\sqrt{5}}{2} \right) \quad (\text{IV, 260}).$$

$$10) \int_0^{-\frac{1}{2}(1+\sqrt{5})} \ell(1-x) \frac{dx}{x} = \frac{1}{10} \pi^2 + \frac{4}{5} \left\{ \ell \left(\frac{1+\sqrt{5}}{2} \right) \right\}^2 - \frac{2}{5} \ell \left(\frac{-1+\sqrt{5}}{2} \right) \cdot \ell \left(\frac{3-\sqrt{5}}{2} \right) - \\ + \ell \left(\frac{-1+\sqrt{5}}{2} \right) \cdot \ell \left(\frac{1+\sqrt{5}}{2} \right) \quad (\text{IV, 260}).$$

$$11) \int_0^{\frac{1}{2}(3+\sqrt{5})} \ell(1-x) \frac{dx}{x} = -\frac{4}{15} \pi^2 + \frac{1}{2} \left\{ \ell \left(\frac{3+\sqrt{5}}{2} \right) \right\}^2 + \frac{1}{5} \left\{ \ell \left(\frac{1+\sqrt{5}}{2} \right) \right\}^2 - \frac{3}{5} \ell \left(\frac{-1+\sqrt{5}}{2} \right) \cdot \\ \ell \left(\frac{3-\sqrt{5}}{2} \right) - \pi i \ell \left(\frac{3+\sqrt{5}}{2} \right) \quad (\text{IV, 260}).$$

$$12) \int_0^{1-a} \ell \{x(x-a)\} \frac{dx}{1-2ax+x^2} = (\text{Arcsin } a)^2 \quad \text{Newmann, C. \& D. M. J. 2, 172.}$$

$$13) \int_1^{\sqrt{1/2}} \ell(1-x^2) \frac{dx}{\sqrt{1-x^2}} = \pi \ell 2 + 2 \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad \text{V. T. 254, N. 13.}$$

$$14) \int_1^{\frac{1}{2}} \frac{\ell x}{(1-\ell x)^2} \frac{dx}{x^2} = \frac{1}{2} e - 1 \quad \text{V. T. 80, N. 6.}$$

$$15) \int_{-1}^1 \frac{\ell(1-x^2)}{p+qx} \frac{dx}{\sqrt{1-x^2}} = \frac{2\pi}{\sqrt{p^2-q^2}} \ell \frac{\sqrt{p^2-q^2}}{p+\sqrt{p^2-q^2}} \quad (\text{VIII, 549}).$$

$$16) \int_{-1}^1 \ell(1+px) \frac{dx}{\sqrt{1-x^2}} = 2\pi \ell \frac{1+\sqrt{1-p^2}}{2} [p^2 < 1], = -2\pi \ell 2p [p^2 > 1] \quad (\text{VIII, 550}).$$

$$17) \int_{-1}^1 \ell(1-px) \frac{dx}{\sqrt{1-x^2}} = 2\pi \ell \frac{1+\sqrt{1-p^2}}{2} [p^2 < 1], = -2\pi \ell 2p [p^2 > 1] \quad (\text{VIII, 550}).$$

$$18) \int_{-1}^1 \ell(p+x) \frac{dx}{\sqrt{1-x^2}} = -2\pi \ell 2 [p^2 < 1], = 2\pi \ell \frac{p+\sqrt{p^2-1}}{2} [p^2 > 1] \quad (\text{VIII, 550}).$$

$$19) \int_{-1}^1 \iota(p-x)^2 \frac{dx}{\sqrt{1-x^2}} = -2\pi \iota 2 [p^2 < 1], = 2\pi \iota \frac{p + \sqrt{p^2-1}}{2} [p^2 > 1] \text{ (VIII, 550).}$$

$$20) \int_{-1}^1 \iota(1+px) \frac{dx}{x\sqrt{1-x^2}} = \text{Arcsin } p = \pi = 21) \int_{-1}^1 \iota\left(\frac{1}{1-px}\right) \frac{dx}{x\sqrt{1-x^2}} [p^2 < 1] \text{ (VIII, 550).}$$

$$22) \int_{-1}^1 \iota(px-q) \frac{x}{1-rx^2} \frac{dx}{\sqrt{1-x^2}} = \frac{\pi}{\sqrt{r(1-r)}} \iota \frac{p\sqrt{r} - \{1 - \sqrt{1-r}\} \{q + \sqrt{q^2-p^2}\}}{p\sqrt{r} + \{1 - \sqrt{1-r}\} \{q + \sqrt{q^2-p^2}\}} \text{ (IV, 201).}$$

$$23) \int_{-1}^1 \iota\left(\frac{1-x^a}{1-x}\right) \frac{x dx}{\sqrt{1-x^2}} = \pi - 2\pi^{\frac{1}{2}(a-1)} \sum_1 \text{Cos} \left(\frac{1}{4} \pi - \frac{2n+1}{a} \pi \right) \cdot \sqrt{2 \text{Sin} \left(\frac{2n+1}{a} \pi \right)} \text{ (IV, 201).}$$

$$24) \int_{-1}^1 \iota\left(\frac{1-x^a}{1-x}\right) \frac{x}{1-x^2 \text{Sin}^2 \lambda} \frac{dx}{\sqrt{1-x^2}} = 2\pi \text{Cosec} \lambda \cdot \sum_1^{\frac{1}{2}(a-1)} \iota \frac{1 - 2g \text{Tg} \frac{1}{2} \lambda + h \text{Tg}^2 \frac{1}{2} \lambda}{1 + 2g \text{Tg} \frac{1}{2} \lambda + h \text{Tg}^2 \frac{1}{2} \lambda}$$

$$\left[\begin{aligned} g &= \text{Cos} \left(\frac{2n+1}{a} \pi \right) + \text{Cos} \left(\frac{1}{4} \pi + \frac{2n+1}{2a} \pi \right) \cdot \sqrt{2 \text{Sin} \left(\frac{2n+1}{a} \pi \right)} \\ h &= 1 + 2 \text{Sin} \left(\frac{2n+1}{a} \pi \right) + 2 \text{Sin} \left(\frac{1}{4} \pi + \frac{2n+1}{2a} \pi \right) \cdot \sqrt{2 \text{Sin} \left(\frac{2n+1}{a} \pi \right)} \end{aligned} \right] \text{ (IV, 201).}$$

$$25) \int_{-\infty}^{\infty} \iota\left(1 + \frac{p^2}{x}\right) \frac{dx}{q+x^2} = 2\pi \iota \frac{p+q}{q} \text{ (IV, 201).}$$

$$26) \int_{-\infty}^{\infty} \iota\left(1 + \frac{p^2}{x}\right) \frac{dx}{q-x^2} = 0 \text{ (IV, 201).}$$

$$27) \int_{-\infty}^{\infty} \iota\left(1 + \frac{p^2}{x}\right) \cdot (-x^2)^{q-1} \frac{dx}{r^2+x^2} = \pi r^{q-1} \iota \frac{p+r}{r}$$

$$28) \int_{-\infty}^{\infty} \iota(p^2 - 2px \text{Cos} \lambda + x^2) \frac{dx}{1+x^2} = \pi \iota (1 + 2p \text{Sin} \lambda + p^2) \left. \vphantom{\int_{-\infty}^{\infty}} \right\} \text{Cauchy, Ann. Math. 17, 84.}$$

$$29) \int_p^{\infty} \iota x \frac{dx}{(1+x^2)^2} = \iota \frac{1+p}{p} + \frac{1}{1+p} \iota p \text{ (VIII, 590).}$$

$$30) \int_p^{\infty} \iota(1+x) \frac{dx}{x^2} = \frac{1}{p} \iota(1+p) + \iota \frac{1+p}{p} \text{ (VIII, 590).}$$

$$31) \int_{-q}^q \iota(x-r) \frac{x}{q^2-px^2} \frac{dx}{\sqrt{q^2-x^2}} = \frac{\pi q}{\sqrt{p(1-p)}} \iota \frac{q\sqrt{p} - \{1 - \sqrt{1-p}\} \{r + \sqrt{r^2-q^2}\}}{q\sqrt{p} + \{1 - \sqrt{1-p}\} \{r + \sqrt{r^2-q^2}\}} \text{ (IV, 202).}$$

$$32) \int_p^q \frac{\iota x \cdot dx}{(x+p)(x+q)} = \frac{1}{2(q-p)} \iota(pq) \cdot \iota \left\{ \frac{(p+q)^2}{4pq} \right\}$$

$$33) \int_p^q \iota \left(\frac{q+x}{p+x} \right) \frac{dx}{x} = \frac{1}{2} \left(\iota \frac{q}{p} \right)^2 \left. \vphantom{\int_p^q} \right\} \text{Winckler, Sitz. Ber. Wien. B. 13. 315.}$$

F. Algébrique;
Logarithmique.

TABLE 145, suite.

Lim. diverses.

$$34) \int_p^q l x \frac{dx}{\sqrt{(x^2 - p^2)(q^2 - x^2)}} = \frac{1}{2q} l p q \cdot F' \left(\sqrt{\frac{q^2 - p^2}{q^2}} \right) \text{ (VIII, 300).}$$

$$35) \int_p^q l \left(\frac{1+rx}{1-rx} \right) \frac{dx}{\sqrt{(x^2 - p^2)(q^2 - x^2)}} = \frac{\pi}{q} F \left\{ \frac{p}{q}, \operatorname{Arcsin} r p \right\} [r < 1] \text{ (VIII, 311).}$$

$$36) \int_p^q \left(l \frac{x}{p} \right)^{r-1} \left(l \frac{q}{x} \right)^{s-1} \frac{dx}{x} = \frac{\Gamma(r) \Gamma(s)}{\Gamma(r+s-1)} \left(l \frac{q}{p} \right)^{r+s-1}$$

$$37) \int_p^q \frac{dx}{x \sqrt{\left(l \frac{x}{p} \cdot l \frac{q}{x} \right)}} = \pi$$

Winckler, Sitz. Ber. Wien. B. 44, 477.

F. Algèbr.; } Intégr. Lim. [Lim. $k = \infty$]. TABLE 146.
Logar.

Lim. diverses.

$$1) \int_0^1 \frac{x^k}{1 + 2x \cos \lambda + x^2} (lx)^{p-1} dx = 0 \text{ (VIII, 319).}$$

$$2) \int_0^1 \left\{ \frac{x^{k-1}}{lx} + \frac{x^{p+k}}{1-x} \right\} dx = 0 \text{ (VIII, 318).}$$

F. Algébrique;
Log. de Log.

TABLE 147.

Lim. 0 et 1.

$$1) \int l l \frac{1}{x} \cdot x^{q-1} dx = -\frac{1}{q} (\Lambda + l q) \text{ V. T. 256, N. 2.}$$

$$2) \int l l \frac{1}{x} \cdot \left(l \frac{1}{x} \right)^{p-1} \cdot x^{q-1} dx = \frac{1}{q^p} \Gamma(p) \{ Z'(p) - l q \} \text{ V. T. 253, N. 1.}$$

$$3) \int l l \frac{1}{x} \cdot x^{q-1} \frac{dx}{\sqrt{l \frac{1}{x}}} = -(\Lambda + 2 l 2 + l q) \sqrt{\frac{\pi}{q}} \text{ V. T. 256, N. 8.}$$

$$4) \int l l \frac{1}{x} \frac{1}{1+x^2} \frac{dx}{\sqrt{l \frac{1}{x}}} = \sqrt{\pi} \cdot \sum_0^{\infty} \frac{(-1)^{n+1}}{\sqrt{2n+1}} \{ l(2n+1) + 2 l 2 + \Lambda \} \text{ V. T. 257, N. 12.}$$

$$5) \int l l \frac{1}{x} \frac{x^p + x^{-p}}{1+x^2} dx = \frac{1}{2} \pi \operatorname{Sec} \frac{1}{2} p \pi \cdot (l \pi - \Lambda) - \sum_0^{\infty} (-1)^n \left\{ \frac{l \{ (2n+1-p)\pi \}}{2n+1-p} + \frac{l \{ (2n+1+p)\pi \}}{2n+1+p} \right\}$$

V. T. 257, N. 1.

$$6) \int l l \frac{1}{x} \frac{x^p - x^{-p}}{1-x^2} dx = \frac{1}{2} \pi \operatorname{Tg} \frac{1}{2} p \pi \cdot (\Lambda - l \pi) + \sum_0^{\infty} \left\{ \frac{l \{ (2n+1-p)\pi \}}{2n+1-p} - \frac{l \{ (2n+1+p)\pi \}}{2n+1+p} \right\}$$

V. T. 257, N. 3.

$$7) \int l \frac{1}{x} \frac{dx}{(1+x)^2} = \frac{1}{2} \left\{ Z' \left(\frac{1}{2} \right) + 2\pi \right\} \text{ (IV, 263).}$$

$$8) \int l \frac{1}{x} \frac{1}{1+x+x^2} \frac{dx}{\sqrt{l \frac{1}{x}}} = \operatorname{Cosec} \frac{1}{3} \pi \cdot \sqrt{\pi} \cdot \sum_1^{\infty} \frac{(-1)^n}{\sqrt{n}} \sin \frac{1}{3} n \pi \cdot \{ 24n + A \} \text{ V. T. 357, N. 13.}$$

$$9) \int l \frac{1}{x} \frac{dx}{1+2x \cos \lambda + x^2} = \frac{1}{2} \pi \operatorname{Cosec} \lambda \cdot l \frac{(2\pi)^{\frac{\lambda}{2}} \Gamma \left(\frac{1}{2} + \frac{\lambda}{2\pi} \right)}{\Gamma \left(\frac{1}{2} - \frac{\lambda}{2\pi} \right)} \text{ (IV, 263).}$$

$$10) \int l \{ q^2 + (lx)^2 \} \frac{dx}{1+x^2} = \pi l \frac{2\Gamma \left(\frac{2q+3\pi}{4\pi} \right)}{\Gamma \left(\frac{2q+\pi}{4\pi} \right)} + \frac{1}{2} \pi l \frac{\pi}{2} \text{ V. T. 258, N. 11.}$$

$$11) \int l \{ q^2 + (lx)^2 \} \frac{x^{\frac{b}{a}} + x^{-\frac{b}{a}}}{1+x^2} dx = \pi \operatorname{Sec} \frac{b\pi}{2a} \cdot l 2a\pi + 2\pi \sum_1^a (-1)^{n-1} \cos \left\{ \left(n - \frac{1}{2} \right) \frac{b\pi}{a} \right\}.$$

$$l \frac{\Gamma \left\{ \frac{2q+2\pi n-\pi}{4a\pi} + \frac{1}{2} \right\}}{\Gamma \left\{ \frac{2q+2\pi n-\pi}{4a\pi} \right\}} \left[\begin{matrix} a+b \\ \text{impair} \end{matrix} \right] = \pi \operatorname{Sec} \frac{b\pi}{2a} \cdot la\pi + 2\pi^{\frac{1}{2}(a-1)} \sum_1^{a-1} (-1)^{n-1} \cos \left\{ \left(n - \frac{1}{2} \right) \frac{b\pi}{a} \right\}.$$

$$l \frac{\Gamma \left\{ \frac{2q-2\pi n+\pi}{2a\pi} + 1 \right\}}{\Gamma \left\{ \frac{2q+2\pi n-\pi}{2a\pi} \right\}} \left[\begin{matrix} a+b \\ \text{pair} \end{matrix} \right] \text{ V. T. 258, N. 7.}$$

$$12) \int l \left\{ \frac{1}{4} \pi^2 a^2 + (lx)^2 \right\} \frac{x^{-\frac{b}{a}} + x^{\frac{b}{a}}}{1+x^2} dx = \pi \operatorname{Sec} \frac{b\pi}{2a} \cdot l\pi + \pi \sum_1^a (-1)^{n-1} \cos \left\{ \left(n - \frac{1}{2} \right) \frac{b\pi}{a} \right\}$$

$$l \left\{ \left(\frac{a+1}{2} - n \right) \cot \left(\frac{\pi}{4} - \frac{2n-1}{4a} \pi \right) \right\} \left[\begin{matrix} a+b \\ \text{impair} \end{matrix} \right] \text{ V. T. 258, N. 9.}$$

$$13) \int l \left\{ \frac{1}{4} \pi^2 + (lx)^2 \right\} \frac{dx}{1+x^2} = \frac{1}{2} \pi l 2 \text{ V. T. 258, N. 1.}$$

$$14) \int l \{ q^2 + (lx)^2 \} \frac{x^{-\frac{b}{a}} - x^{\frac{b}{a}}}{1-x^2} dx = \pi \operatorname{Tg} \frac{b\pi}{2a} \cdot l 2a\pi + 2\pi \sum_1^{a-1} (-1)^{n-1} \sin \frac{n b \pi}{a} \cdot l \frac{\Gamma \left(\frac{q+n\pi}{2a\pi} + \frac{1}{2} \right)}{\Gamma \left(\frac{q+n\pi}{2a\pi} \right)} \left[\begin{matrix} a+b \\ \text{impair} \end{matrix} \right] =$$

$$= \pi \operatorname{Tg} \frac{b\pi}{2a} \cdot la\pi + 2\pi^{\frac{1}{2}(a-1)} \sum_1^{a-1} (-1)^{n-1} \sin \frac{n b \pi}{a} \cdot l \frac{\Gamma \left(\frac{q-n\pi}{a\pi} + 1 \right)}{\Gamma \left(\frac{q+n\pi}{a\pi} \right)} \left[\begin{matrix} a+b \\ \text{pair} \end{matrix} \right] \text{ V. T. 258, N. 8.}$$

$$15) \int l \left\{ \frac{1}{4} x^2 a^2 + (lx)^2 \right\} \frac{x^{-\frac{b}{2}} - x^{\frac{b}{2}}}{1-x^2} dx = \pi Tg \frac{b\pi}{2a} \cdot l\pi + \pi \sum_1^{a-1} (-1)^{n-1} \sin \frac{n b \pi}{a} \cdot l \left\{ \left(\frac{1}{2} a - n \right) \right. \\ \left. \cot \left(\frac{\pi}{4} - \frac{n\pi}{2a} \right) \right\} \left[\begin{smallmatrix} b+a \\ \text{impair} \end{smallmatrix} \right] \text{ V. T. 258, N. 10.}$$

$$16) \int l \{ q^2 + (lx)^2 \} \frac{dx}{(1+x)\sqrt{x}} = 2\pi l \frac{\Gamma \left(\frac{q+3\pi}{4\pi} \right)}{\Gamma \left(\frac{q+\pi}{4\pi} \right)} + \pi l\pi \text{ V. T. 258, N. 11.}$$

$$17) \int l \{ q^2 + (lx)^2 \} \frac{1+x^2}{1+x^2+x^4} \frac{dx}{\sqrt{x}} = -\pi l\pi - 2\pi \sin \frac{\pi}{3} \cdot l \frac{\Gamma \left(\frac{q+4\pi}{6\pi} \right) \Gamma \left(\frac{q+5\pi}{6\pi} \right)}{\Gamma \left(\frac{q+\pi}{6\pi} \right) \Gamma \left(\frac{q+2\pi}{6\pi} \right)} \\ \text{V. T. 258, N. 12.}$$

$$18) \int \left\{ (p-1)x - \frac{(1-lx)^{-1} - (1-lx)^{-p}}{l(1-lx)} \right\} \frac{dx}{x l x} = -l\Gamma(p) \text{ V. T. 354, N. 16.}$$

$$19) \int \left\{ \frac{x}{lx} + \frac{1}{(1-lx)^2 l(1-lx)} \right\} \frac{dx}{x} = 0 \text{ V. T. 354, N. 14.}$$

$$20) \int \left\{ x - \frac{(1-lx)^{-(p+1)}}{l(1-lx)} \right\} \frac{dx}{x l x} = -lp \text{ V. T. 354, N. 13.}$$

$$1) \int_0^\infty l l x \frac{dx}{1+x^2} = \frac{1}{2} \pi l \left(\frac{\Gamma(\frac{1}{4})}{\Gamma(\frac{3}{4})} \sqrt{2\pi} \right) \text{ (IV, 264).}$$

$$2) \int_0^\infty l l x \frac{dx}{1+x+x^2} = \frac{\pi}{\sqrt{3}} l \left(\frac{\Gamma(\frac{1}{3})}{\Gamma(\frac{2}{3})} \sqrt{2\pi} \right) \text{ (IV, 265).}$$

$$3) \int_0^\infty l l x \frac{x^{a-1} - x^{-a-1}}{x^b - x^{-b}} dx = \frac{\pi}{2b} Tg \frac{a\pi}{2b} \cdot l2\pi + \frac{\pi}{b} \sum_1^{b-1} (-1)^{n-1} \sin \frac{n a \pi}{b} \cdot l \frac{\Gamma \left(\frac{b+n}{2b} \right)}{\Gamma \left(\frac{n}{2b} \right)} \left[\begin{smallmatrix} a+b \\ \text{impair} \end{smallmatrix} \right] = \\ = \frac{\pi}{2b} Tg \frac{a\pi}{2b} \cdot l\pi + \frac{\pi}{b} \sum_1^{b-1} (-1)^{n-1} \sin \frac{n a \pi}{b} \cdot l \frac{\Gamma \left(\frac{b-n}{2b} \right)}{\Gamma \left(\frac{n}{2b} \right)} \left[\begin{smallmatrix} a+b \\ \text{pair} \end{smallmatrix} \right] \text{ (IV, 265).}$$

$$4) \int_0^{\infty} \log x \frac{x^{a-1} dx}{1+x^2+x^4+\dots+x^{2a-2}} = \frac{\pi}{2a} \operatorname{Tg} \frac{\pi}{2a} \cdot l 2\pi + \frac{\pi}{a} \sum_1^{a-1} (-1)^{n-1} \sin \frac{n\pi}{a} \cdot l \frac{\Gamma\left(\frac{a+n}{2a}\right)}{\Gamma\left(\frac{n}{2a}\right)} \left[\begin{smallmatrix} a \\ \text{pair} \end{smallmatrix} \right], =$$

$$= \frac{\pi}{2a} \operatorname{Tg} \frac{\pi}{2a} \cdot l \pi + \frac{\pi}{a} \sum_1^{a-1} (-1)^{n-1} \sin \frac{n\pi}{a} \cdot l \frac{\Gamma\left(\frac{a-n}{2a}\right)}{\Gamma\left(\frac{n}{2a}\right)} \left[\begin{smallmatrix} a \\ \text{impair} \end{smallmatrix} \right] \quad (\text{IV, 265}).$$

$$5) \int_1^{\infty} \log x \frac{dx}{1-x+x^2} = \frac{2\pi}{\sqrt{3}} \left\{ \frac{5}{6} l 2\pi - l \Gamma\left(\frac{1}{6}\right) \right\} \quad (\text{IV, 265}).$$

$$9) \int_1^{\infty} \log \frac{x^{a-1}+x^{-a-1}}{x^b+x^{-b}} dx = \frac{\pi}{2b} \sec \frac{a\pi}{2b} \cdot l 2\pi + \frac{\pi}{b} \sum_1^b (-1)^{n-1} \cos \left\{ \left(n - \frac{1}{2}\right) \frac{a\pi}{b} \right\} \cdot l \frac{\Gamma\left(\frac{2b+2n-1}{4b}\right)}{\Gamma\left(\frac{2n-1}{4b}\right)} \left[\begin{smallmatrix} a+b \\ \text{impair} \end{smallmatrix} \right], =$$

$$= \frac{\pi}{2b} \sec \frac{a\pi}{2b} \cdot l \pi + \frac{\pi}{b} \sum_1^{b-1} (-1)^{n-1} \cos \left\{ \left(n - \frac{1}{2}\right) \frac{a\pi}{b} \right\} \cdot l \frac{\Gamma\left(\frac{2b-2n+1}{2b}\right)}{\Gamma\left(\frac{2n-1}{2b}\right)} \left[\begin{smallmatrix} a+b \\ \text{pair} \end{smallmatrix} \right] \quad (\text{IV, 265}).$$

$$1) \int x \sin px dx = \frac{1}{p^2} (\sin p - p \cos p) \quad (\text{VIII, 363}).$$

$$2) \int \cos 2px \cdot (1-x^2)^{q-1} dx = \frac{\Gamma(q)}{2\Gamma(q+\frac{1}{2})} \sqrt{\pi} \cdot \sum_0^{\infty} (-1)^n \frac{p^{2n}}{1^{n/2} (q+\frac{1}{2})^{n/2}} \quad (\text{VIII, 514}).$$

$$3) \int \cos rx \cdot (1-x^2)^{q-p-1} x^{2p-1} dx = \frac{\Gamma(p)\Gamma(q-p)}{2\Gamma(q)} \sum_0^{\infty} (-1)^n \frac{p^{n/2}}{1^{n/2} q^{n/2}} r^{2n} \quad (\text{IV, 266}).$$

$$4) \int \cos(\sqrt{rx}) \cdot (1-x)^{q-p-1} x^{2p-1} dx = \frac{\Gamma(p)\Gamma(q-p)}{\Gamma(q)} \sum_0^{\infty} (-r)^n \frac{p^{n/2}}{1^{n/2} q^{n/2}} \quad \text{V. T. 149, N. 3.}$$

$$5) \int \sin px \frac{dx}{x} = Si(p) = \sum_1^{\infty} \frac{1}{2n-1} \frac{p^{2n-1}}{1^{2n-1/2}} \quad (\text{IV, 266}).$$

$$6) \int \sin 2px \cdot dx \sqrt{1-x^2} = \sum_0^{\infty} \frac{(2p)^{2n+1}}{(3^{n/2})^2} \frac{(-1)^n}{2n+3} \quad (\text{VIII, 515}).$$

$$7) \int \cos 2px \cdot dx \sqrt{1-x^2} = \frac{\pi}{2} \sum_0^{\infty} \frac{p^{2n}}{(1^{n/2})^2} \frac{(-1)^n}{n+1} \quad (\text{VIII, 515}).$$

$$8) \int \cos 2px \cdot (1-x^2)^{a-1} dx = \frac{1^{a+1}}{2^{a+1} 1^{a+1}} \left\{ 1 + \sum_1^{\infty} (-1)^n \frac{p^{2n}}{1^{n/2} (a+1)^{n/2}} \right\} \quad (\text{IV, 266}).$$

- $$9) \int \sin 2px \frac{dx}{\sqrt{1-x^2}} = \sum_{n=0}^{\infty} (-1)^n \frac{(2p)^{2n+1}}{(2^{n+1})^2} \text{ (VIII, 516).}$$
- $$10) \int \cos 2px \frac{dx}{\sqrt{1-x^2}} = \frac{\pi}{2} \sum_{n=0}^{\infty} (-1)^n \frac{p^{2n}}{(1^{n+1})^2} \text{ (VIII, 516).}$$
- $$11) \int \left\{ \cos qx - \cos \frac{q}{x} \right\} \frac{dx}{1-x^2} = \frac{1}{2} \pi \sin q \text{ (VIII, 687).}$$
- $$12) \int \left\{ \frac{x \cos qx}{1-x^2} + r \frac{\cos \frac{q}{x^r}}{x^r - x^{-r}} \right\} \frac{dx}{x} = \frac{1}{2} \pi (\sin q - \cos q \cdot l r) \text{ (IV, 266).}$$
- $$13) \int \sin \left\{ p \left(x^2 - \frac{1}{x^2} \right) \right\} \cdot \left(x - \frac{1}{x} \right) \frac{dx}{x} = -\frac{1}{2} \sigma^{-1p} \sqrt{\frac{\pi}{2p}} \text{ V. T. 149, N. 18, 19.}$$
- $$14) \int \cos \left\{ p \left(x^2 - \frac{1}{x^2} \right) \right\} \cdot \left(x + \frac{1}{x} \right) \frac{dx}{x} = -\frac{1}{2} \sigma^{-1p} \sqrt{\frac{\pi}{2p}} \text{ V. T. 149, N. 18, 19.}$$
- $$15) \int \sin \left\{ \frac{1}{2} p \left(x + \frac{1}{x} \right) \right\} \cdot \sin \left\{ \frac{1}{2} p \left(x - \frac{1}{x} \right) \right\} \frac{dx}{1-x^2} = -\frac{1}{4} \pi \sin p \text{ (VIII, 687).}$$
- $$16) \int \sin \left\{ p \left(x - \frac{1}{x} \right) \right\} \frac{\{(1+x) - i(1-x)\}^{-a} - \{(1+x) + i(1-x)\}^{-a}}{2i} \left(x + \frac{1}{x} \right) x^{\frac{1}{2}a-1} dx =$$
- $$= \frac{\pi}{\Gamma(\frac{1}{2}a)} \frac{\sigma^{-1p}}{2^{\frac{1}{2}a+1}} p^{\frac{1}{2}a-1} \text{ (VIII, 446).}$$
- $$17) \int \cos \left\{ p \left(x - \frac{1}{x} \right) \right\} \frac{\{(1+x) - i(1-x)\}^{-a} + \{(1+x) + i(1-x)\}^{-a}}{2} \left(x + \frac{1}{x} \right) x^{\frac{1}{2}a-1} dx =$$
- $$= \frac{-\pi}{\Gamma(\frac{1}{2}a)} \frac{\sigma^{-1p}}{2^{\frac{1}{2}a+1}} p^{\frac{1}{2}a-1} \text{ (VIII, 445).}$$
- $$18) \int \sin \left\{ p \left(x - \frac{1}{x} \right) \right\} \frac{1-x}{x} \frac{dx}{\sqrt{x}} = \sigma^{-1p} \sqrt{\frac{\pi}{2p}} = 19) - \int \cos \left\{ p \left(x - \frac{1}{x} \right) \right\} \frac{1+x}{x} \frac{dx}{\sqrt{x}} \text{ (VIII, 446).}$$
- $$20) \int \frac{x dx}{\cos rx \cdot \cos \{r(1-x)\}} = \frac{1}{r} \operatorname{Cosec} r \cdot l \operatorname{Sec} r \left[r < \frac{1}{2} \pi \right] \text{ (VIII, 338*)}. \quad 21) \int \frac{\sin \{r(2x-1)\} \cdot x^2 dx}{\cos^2 rx \cdot \cos^2 \{r(1-x)\}} = \frac{1}{r} \operatorname{Sec} r + \frac{2}{r^2} \operatorname{Cosec} r \cdot l \cos r \left[r < \frac{1}{2} \pi \right] \text{ V. T. 149, N. 20.}$$

$$1) \int \sin qx \cdot x^{p-1} dx = \frac{1}{q^p} \Gamma(p) \sin \frac{1}{2} p \pi [p^2 < 1] \text{ (VIII, 442).}$$

$$2) \int \cos qx \cdot x^{p-1} dx = \frac{1}{q^p} \Gamma(p) \cos \frac{1}{2} p \pi [p^2 < 1] \text{ (VIII, 442).}$$

$$3) \int \sin\left(\frac{1}{2}p\pi - qx\right) \cdot x^{p-1} dx = 0 \quad [p^2 < 1] \quad (\text{VIII}, 520).$$

$$4) \int \sin(qx^2) \cdot \sin 2px \cdot x dx = \frac{p}{2q} \sqrt{\frac{\pi}{2q}} \cdot \left(\cos \frac{p^2}{q} + \sin \frac{p^2}{q} \right) \quad (\text{VIII}, 448).$$

$$5) \int \sin(qx^2) \cdot \cos 2px \cdot x dx = 0 = \quad 6) \int \cos(qx^2) \cdot \cos 2px \cdot x dx \quad \text{V. T. 70, N. 11, 12.}$$

$$7) \int \cos(qx^2) \cdot \sin 2px \cdot x dx = \frac{p}{2q} \sqrt{\frac{\pi}{2q}} \cdot \left(\sin \frac{p^2}{q} - \cos \frac{p^2}{q} \right) \quad (\text{VIII}, 448).$$

$$8) \int \cos\{2\sqrt{rx}\} \cdot x^{p-1} (1-x)^{q-1} dx = \frac{\Gamma(p)\Gamma(q)}{\Gamma(p+q)} \sum_{n=0}^{\infty} \frac{(-1)^n}{1^{2n+1}} \frac{p^{n+1}}{(p+q)^{n+1}} (4r)^n \quad (\text{VIII}, 514).$$

$$9) \int \frac{\sin x \cdot x dx}{\sqrt{1-2p\cos x + p^2}} = \frac{1+p}{p} \pi + 2 \frac{1-p^2}{p} F'(p) - \frac{4}{p} E'(p) \quad [p < 1] \quad (\text{IV}, 341*).$$

$$1) \int \sin px \frac{dx}{x} = \frac{1}{2} \pi [p > 0], = 0 [p = 0], = -\frac{1}{2} \pi [p < 0] \quad (\text{VIII}, 471).$$

$$2) \int \cos px \frac{dx}{x} = \infty \quad (\text{IV}, 260) =$$

$$3) \int \sin^2 px \frac{dx}{x} \quad (\text{E. O. A.}).$$

$$4) \int \sin^{2a+1} x \frac{dx}{x} = \frac{1}{2} \pi \frac{1^{a/2}}{2^{a/2}} \quad (\text{IV}, 269).$$

$$5) \int \text{Tg} px \frac{dx}{x} = \frac{1}{2} \pi \quad (\text{VIII}, 385).$$

$$6) \int \sin(p \text{Tg} x) \frac{dx}{x} = \frac{\pi}{2} (1 - e^{-p}) \quad (\text{VIII}, 388). \quad 7) \int \sin qx \cdot \sin px \frac{dx}{x} = \frac{1}{4} \pi \left(\frac{q+p}{q-p} \right)^2 \quad (\text{E. O. A.}).$$

$$8) \int \sin qx \cdot \cos px \frac{dx}{x} = \frac{1}{2} \pi [q > p], = 0 [q < p], = \frac{1}{4} \pi [q = p] \quad (\text{VIII}, 333).$$

$$9) \int \sin qx \cdot \cos^2 px \frac{dx}{x} = \frac{1}{2} \pi [q > 2p], = \frac{3}{8} \pi [q = 2p], = \frac{1}{4} \pi [q < 2p] \quad (\text{IV}, 270).$$

$$10) \int \sin^2 qx \cdot \sin px \frac{dx}{x} = \frac{1}{4} \pi [p < 2q], = \frac{1}{8} \pi [p = 2q], = 0 [p > 2q] \quad (\text{E. O. A.}).$$

$$11) \int \sin^2 qx \cdot \sin^2 px \frac{dx}{x} = \infty \quad (\text{E. O. A.}). \quad 12) \int \sin^2 qx \cdot \cos px \frac{dx}{x} = \frac{1}{8} \pi \frac{(p^2 - 4q^2)^2}{p^4} \quad (\text{E. O. A.}).$$

$$13) \int \sin^2 qx \cdot \cos^2 px \frac{dx}{x} = \frac{1}{16} \int \frac{(2q+p)^2 (p-2q)^2 (2q+3p)(3p-2q)}{9p^4} \left[\begin{array}{l} p > 2q, \\ \text{ou } 3p < 2q \end{array} \right], =$$

$$= \frac{1}{16} \int \frac{(2q+p)^2 (2q-p)^2 (2q+3p)(3p-2q)}{9p^4} [3p > 2q > p] \text{ (IV, 271).}$$

$$14) \int \sin^2 qx \cdot \sin^2 px \frac{dx}{x} = \frac{1}{8} \pi [2p > 3q], = \frac{5}{32} \pi [2p = 3q], = \frac{3}{16} \pi [3q > 2p > q], =$$

$$= \frac{3}{32} \pi [2p = q], = 0 [2p < q] \text{ (E. O. A.).}$$

$$15) \int \sin^2 qx \cdot \cos^2 px \frac{dx}{x} = 0 [p > 3q], = -\frac{1}{16} \pi [p = 3q], = -\frac{1}{8} \pi [3q > p > q], =$$

$$= \frac{1}{16} \pi [p = q], = \frac{\pi}{4} [q > p] \text{ (E. O. A.).}$$

$$16) \int (1 - 2p \cos 2x + p^2)^a \sin x \frac{dx}{x} = \frac{\pi}{2} \sum_{n=0}^a \binom{a}{n} p^{2n} = \quad 17) \int (1 - 2p \cos 2x + p^2)^a \operatorname{Tg} x \frac{dx}{x}$$

$$18) \int (1 - 2p \cos 4x + p^2)^a \operatorname{Tg} x \frac{dx}{x} = \frac{\pi}{2} \sum_{n=0}^a \binom{a}{n} p^{2n}$$

Sur 16) à 18) voyez VIII, 386.

$$19) \int \sin(p \operatorname{Tg} x) \cdot \cos x \frac{dx}{x} = \frac{\pi}{2} (1 - e^{-p}) \text{ (VIII, 388).}$$

$$20) \int \cos(p \operatorname{Tg} x) \cdot \sin x \frac{dx}{x} = \frac{\pi}{2} e^{-p} =$$

$$21) \int \cos(p \operatorname{Tg} x) \cdot \operatorname{Tg} x \frac{dx}{x} \text{ (VIII, 387).}$$

$$22) \int \cos(p \operatorname{Tg} 2x) \cdot \operatorname{Tg} x \frac{dx}{x} = \frac{\pi}{2} e^{-p} \text{ (VIII, 387).}$$

$$23) \int \cos(p \operatorname{Tg} x) \cdot \sin^2 x \frac{dx}{x} = \frac{1-p}{4} \pi e^{-p} \text{ (VIII, 388).}$$

$$24) \int \sin^{2a+1} x \cdot \cos^{2b} x \frac{dx}{x} = \frac{\pi}{2} \frac{1^{a/2} 1^{b/2}}{2^{a+b/2}} =$$

$$25) \int \sin^{2a+1} x \cdot \cos^{2b-1} x \frac{dx}{x} \text{ (VIII, 385).}$$

$$26) \int \cos^r x \cdot \operatorname{Tg} x \frac{dx}{x} = \frac{\pi}{2} \text{ Malmsten, N. Act. Ups. 2, 171.}$$

$$27) \int \sin^{2s} x \cdot \operatorname{Tg} x \frac{dx}{x} = \frac{\pi}{4} \text{ (H, 28).}$$

$$28) \int \sin^{2s} x \cdot \operatorname{Cot} x \frac{dx}{x} = \frac{\pi}{4} (2s-1) \text{ (H, 27).}$$

$$1) \int \sin qx \cdot \sin rx \cdot \sin px \frac{dx}{x} = 0 [p < r - q], = \frac{1}{8} \pi [p = r - q], = \frac{1}{4} \pi [r - q < p < r + q], = \\ = \frac{1}{8} \pi [p = q + r], = 0 [r + q < p < \infty], [p < q < r] \text{ (E. O. A.)}.$$

$$2) \int \sin^2 qx \cdot \sin rx \cdot \sin px \frac{dx}{x} = \frac{1}{8} \log \left(\frac{r+p}{r-p} \right)^2 + \frac{1}{8} \log \frac{(2q-r+p)(2q+r-p)}{(2q+r+p)(2q-r-p)} \text{ (E. O. A.)}.$$

$$3) \int \sin^2 qx \cdot \sin^2 rx \cdot \sin px \frac{dx}{x} = \frac{1}{8} \pi [2q > 2r + p > 2p], = \frac{5}{16} \pi [2q - p = 2r > p], = \\ = \frac{3}{16} \pi [2r > p > 2(q - r)], = \frac{1}{16} \pi [2r = p < q], = \frac{3}{32} \pi [2r = p = q], = \\ = \frac{1}{8} \pi [2q > 2r = p > q], = \frac{1}{16} \pi [2r = p = 2q], = 0 [2q > p + 2r > 4r], = \\ = \frac{1}{32} \pi [2q = 2r + p < 2p], = \frac{1}{16} \pi [2r + p > 2q > p > 2r], = \\ = 0 [2r < p = 2q < 2r + p], = -\frac{1}{16} \pi [2r < p, 2q < p, 2q < 2r + p], = \\ = -\frac{1}{32} \pi [3q = p - 2r], = 0 [p > 2q < p - 2r] \text{ (E. O. A.)}.$$

$$4) \int \sin^{2a-1} 2x \cdot \cos^{2b} 2x \cdot \cos^2 x \frac{dx}{x} = \frac{\pi}{4} \frac{1^{a/2} 1^{b/2}}{2^{a+b/2}} \text{ (VIII, 385)}.$$

$$5) \int \cos^{2a} x \cdot \cos 2bx \cdot \sin x \frac{dx}{x} = \frac{\pi}{2^{2a+1}} \frac{1^{2a+1}}{1^{a+b/2} 1^{a-b/2}} = \quad 6) \int \cos^{2a-1} x \cdot \cos 2bx \cdot \sin x \frac{dx}{x}$$

$$7) \int \cos^{2a} 2x \cdot \cos 4bx \cdot \operatorname{Tg} x \frac{dx}{x} = \frac{\pi}{2^{2a+1}} \frac{1^{2a+1}}{1^{a+b/2} 1^{a-b/2}} \quad \text{Sur 5) à 7) voyez VIII, 385.}$$

$$8) \int \sin(p \operatorname{Tg} x) \cdot \sin x \cdot \operatorname{Tg} x \frac{dx}{x} = \frac{\pi}{2} e^{-p} = \quad 9) \int \sin(p \operatorname{Tg} x) \cdot \operatorname{Tg}^2 x \frac{dx}{x} \text{ (VIII, 367).}$$

$$10) \int \sin(p \operatorname{Tg} 2x) \cdot \operatorname{Tg} 2x \cdot \operatorname{Tg} x \frac{dx}{x} = \frac{\pi}{2} e^{-p} \text{ (VIII, 388).}$$

$$11) \int \sin(p \operatorname{Tg} x) \cdot \sin x \cdot \cos x \frac{dx}{x} = \frac{1+p}{4} \pi e^{-p} = \quad 12) \int \sin(p \operatorname{Tg} x) \cdot \sin x \cdot \cos^2 x \frac{dx}{x} \text{ (VIII, 388).}$$

$$13) \int \sin(p \operatorname{Tg} 2x) \cdot \cos^2 2x \cdot \operatorname{Tg} x \frac{dx}{x} = \frac{1+p}{4} \pi e^{-p} \text{ (VIII, 388).}$$

$$14) \int \cos(p \operatorname{Tg} 2x) \cdot \sin^2 x \cdot \cos x \frac{dx}{x} = \frac{1-p}{16} \pi e^{-p} = \quad 15) \frac{1}{4} \int \cos(p \operatorname{Tg} x) \cdot \sin^2 x \cdot \operatorname{Tg} x \frac{dx}{x} \text{ (VIII, 388).}$$

F. Alg. rat. fract. à dén. x ;

Circ. Dir. en num. à 3 fact. mon.

TABLE 152, suite.

Lim. 0 et ∞ .

$$16) \int \sin 4sr x \cdot \operatorname{Tgr} x \cdot \sin x \frac{dx}{x} = -\frac{\pi}{2} = 17) - \int \sin \{(2sr-1)x\} \cdot \sin 2sr x \cdot \operatorname{Tgr} x \frac{dx}{x} \quad (\text{H}, 28).$$

$$18) \int \sin \{(2sr+1)x\} \cdot \sin 2sr x \cdot \operatorname{Tgr} x \frac{dx}{x} = 0 \quad (\text{H}, 28).$$

$$19) \int \sin^2 2sr x \cdot \operatorname{Tgr} x \cdot \cos x \frac{dx}{x} = \frac{\pi}{4} \quad (\text{H}, 28).$$

$$20) \int \sin 2sr x \cdot \operatorname{Cot} r x \cdot \sin x \frac{dx}{x} = \frac{\pi}{2} \quad (\text{H}, 27).$$

$$21) \int \sin sr x \cdot \sin \{(sr+1)x\} \cdot \operatorname{Cot} r x \frac{dx}{x} = \frac{1}{2} s \pi \quad (\text{H}, 27).$$

$$22) \int \sin sr x \cdot \sin \{(sr-1)x\} \cdot \operatorname{Cot} r x \frac{dx}{x} = \frac{1}{2} (s-1) \pi \quad (\text{H}, 27).$$

$$23) \int \sin^2 sr x \cdot \operatorname{Cot} r x \cdot \cos x \frac{dx}{x} = \frac{\pi}{4} (2s-1) \quad (\text{H}, 27).$$

F. Alg. rat. fract. à dén. x ;

Circ. Dir. en num. à plus. fact. mon.

TABLE 153.

Lim. 0 et ∞ .

$$1) \int \cos^s r x \cdot \cos^{s_1} r_1 x \dots \sin \{(sr+s_1 r_1+\dots)x\} \frac{dx}{x} = \frac{\pi}{2^{1+s+s_1+\dots}} (2^{s+s_1+\dots}-1) \quad (\text{H}, 11).$$

$$2) \int \cos^s r x \cdot \cos^{s_1} r_1 x \dots \sin \{(sr+s_1 r_1+\dots)x\} \cdot \cos x \frac{dx}{x} = \frac{\pi}{2^{1+s+s_1+\dots}} (2^{s+s_1+\dots}-1) \quad (\text{H}, 11).$$

$$3) \int \cos^s r x \cdot \cos^{s_1} r_1 x \dots \cos \{(sr+s_1 r_1+\dots)x\} \cdot \sin x \frac{dx}{x} = \frac{\pi}{2^{1+s+s_1+\dots}} \quad (\text{H}, 11).$$

$$4) \int \cos^s r x \cdot \cos^{s_1} r_1 x \dots \sin \{(sr+s_1 r_1+\dots+1)x\} \frac{dx}{x} = \frac{\pi}{2} \quad (\text{H}, 12).$$

$$5) \int \cos^s r x \cdot \cos^{s_1} r_1 x \dots \sin \{(sr+s_1 r_1+\dots-1)x\} \frac{dx}{x} = \frac{\pi}{2^{s+s_1+\dots}} (2^{s+s_1+\dots-1}-1) \quad (\text{H}, 12).$$

$$6) \int \cos^q p x \cdot \cos^{q_1} p_1 x \dots \sin^s r x \cdot \sin^{s_1} r_1 x \dots \sin \left\{ (s+s_1+\dots) \frac{1}{2} \pi - (qp+q_1 p_1+\dots+sr+s_1 r_1+\dots)x \right\} \frac{dx}{x} = \frac{-\pi}{2^{1+q+q_1+\dots+s+s_1+\dots}} \quad (\text{H}, 13).$$

$$7) \int \cos^q p x \cdot \cos^{q_1} p_1 x \dots \sin^s r x \cdot \sin^{s_1} r_1 x \dots \sin \left\{ (s+s_1+\dots) \frac{1}{2} \pi - (qp+q_1 p_1+\dots+sr+s_1 r_1+\dots)x \right\} \cdot \cos x \frac{dx}{x} = \frac{-\pi}{2^{1+q+q_1+\dots+s+s_1+\dots}} \quad (\text{H}, 13).$$

$$8) \int \cos^q p x . \cos^{q_1} p_1 x \dots \sin^r r x . \sin^{r_1} r_1 x \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (q p + q_1 p_1 + \dots + s r + s_1 r_1 + \dots) x \right\} . \sin x \frac{dx}{x} = \frac{\pi}{2^{1+q+q_1+\dots+s+s_1+\dots}} \quad (\text{H}, 13).$$

$$9) \int \cos^q p x . \cos^{q_1} p_1 x \dots \sin^r r x . \sin^{r_1} r_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (q p + q_1 p_1 + \dots + s r + s_1 r_1 + \dots + 1) x \right\} \frac{dx}{x} = \frac{-\pi}{2^{q+q_1+\dots+s+s_1+\dots}} \quad (\text{H}, 13).$$

$$10) \int \cos^q p x . \cos^{q_1} p_1 x \dots \sin^r r x . \sin^{r_1} r_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (q p + q_1 p_1 + \dots + s r + s_1 r_1 + \dots - 1) x \right\} \frac{dx}{x} = 0 \quad (\text{H}, 13).$$

$$11) \int \cos^q r x . \cos^{q_1} r_1 x \dots \sin t x \frac{dx}{x} = \frac{\pi}{2} =$$

$$12) \int \cos^q r x . \cos^{q_1} r_1 x \dots \sin t x . \cos x \frac{dx}{x}$$

$$13) \int \cos^q r x . \cos^{q_1} r_1 x \dots \cos t x . \sin x \frac{dx}{x} = 0$$

Dans 11) à 13) on a $t > s r + s_1 r_1 + \dots$ (H, 24).

$$14) \int \cos^q p x . \cos^{q_1} p_1 x \dots \sin^r r x . \sin^{r_1} r_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - t x \right\} \frac{dx}{x} = 0$$

$$15) \int \cos^q p x . \cos^{q_1} p_1 x \dots \sin^r r x . \sin^{r_1} r_1 x \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - t x \right\} . \sin x \frac{dx}{x} = 0$$

$$16) \int \cos^q p x . \cos^{q_1} p_1 x \dots \sin^r r x . \sin^{r_1} r_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - t x \right\} . \cos x \frac{dx}{x} = 0$$

Dans 14) à 16) on a $t > q p + q_1 p_1 + \dots + s r + s_1 r_1 + \dots$ (H, 24).

$$1) \int \sqrt{x} \sin x \frac{dx}{x} = \sqrt{x} 27. F' \left(\sin \frac{\pi}{12} \right) \quad (\text{VIII}, 388).$$

$$2) \int \sin x . \sqrt{x} \sin^2 x \frac{dx}{x} = 3 \sqrt{x} 27. E' \left(\sin \frac{\pi}{12} \right) - \frac{3+3\sqrt{3}}{2\sqrt{3}} F' \left(\sin \frac{\pi}{12} \right) = 3) \int T_7 x . \sqrt{x} \sin^2 x \frac{dx}{x}$$

$$4) \int T_7 x . \sqrt{x} \sin^2 x \frac{dx}{x} = 3 \sqrt{x} 27. E' \left(\sin \frac{\pi}{12} \right) - \frac{3+3\sqrt{3}}{2\sqrt{3}} F' \left(\sin \frac{\pi}{12} \right) = 5) \int \sin x . \sqrt{x} \cos^2 x \frac{dx}{x}$$

$$6) \int Tg x \cdot \sqrt{Cos^2 x} \frac{dx}{x} = 3 \sqrt{27} \cdot E' \left(\sin \frac{\pi}{12} \right) - \frac{3 + 3\sqrt{3}}{2\sqrt{3}} F' \left(\sin \frac{\pi}{12} \right) = 7) \int Tg x \cdot \sqrt{Cos^2 2x} \frac{dx}{x}$$

Sur 2) à 7) voyez VIII, 388.

$$8) \int Sin x \cdot \sqrt{1 - p^2 Sin^2 x} \frac{dx}{x} = E'(p) =$$

$$9) \int Tg x \cdot \sqrt{1 - p^2 Sin^2 x} \frac{dx}{x} \text{ (VIII, 392).}$$

$$10) \int Tg x \cdot \sqrt{1 - p^2 Sin^2 2x} \frac{dx}{x} = E'(p) \text{ (VIII, 392*)}.$$

$$11) \int Sin x \cdot Cos x \cdot \sqrt{1 - p^2 Sin^2 x} \frac{dx}{x} = \frac{1}{3p^2} \{ (1 + p^2) E'(p) - (1 - p^2) F'(p) \} \text{ (VIII, 393).}$$

$$12) \int Sin x \cdot Cos^2 x \cdot \sqrt{1 - p^2 Sin^2 x} \frac{dx}{x} = \frac{1}{3p^2} \{ (1 + p^2) E'(p) - (1 - p^2) F'(p) \} \text{ (VIII, 393).}$$

$$13) \int Tg x \cdot Cos^2 2x \cdot \sqrt{1 - p^2 Sin^2 2x} \frac{dx}{x} = \frac{1}{3p^2} \{ (1 + p^2) E'(p) - (1 - p^2) F'(p) \} \text{ (VIII, 393*)}.$$

$$14) \int Sin^2 x \cdot Tg x \cdot \sqrt{1 - p^2 Sin^2 x} \frac{dx}{x} = \frac{1}{3p^2} \{ (2p^2 - 1) E'(p) + (1 - p^2) F'(p) \} \text{ (VIII, 392).}$$

$$15) \int Sin^2 x \cdot \sqrt{1 - p^2 Sin^2 x} \frac{dx}{x} = \frac{1}{3p^2} \{ (2p^2 - 1) E'(p) + (1 - p^2) F'(p) \} \text{ (VIII, 392).}$$

$$16) \int Sin^2 x \cdot Cos^2 x \cdot \sqrt{1 - p^2 Sin^2 2x} \frac{dx}{x} = \frac{1}{12p^2} \{ (2p^2 - 1) E'(p) + (1 - p^2) F'(p) \} \text{ (VIII, 392).}$$

$$17) \int Sin x \cdot \sqrt{1 - p^2 Sin^2 x}^2 \frac{dx}{x} = \frac{1}{3} \{ 2(2 - p^2) E'(p) - (1 - p^2) F'(p) \} \text{ (VIII, 393).}$$

$$18) \int Tg x \cdot \sqrt{1 - p^2 Sin^2 x}^2 \frac{dx}{x} = \frac{1}{3} \{ 2(2 - p^2) E'(p) - (1 - p^2) F'(p) \} \text{ (VIII, 393).}$$

$$19) \int Tg x \cdot \sqrt{1 - p^2 Sin^2 2x}^2 \frac{dx}{x} = \frac{1}{3} \{ 2(2 - p^2) E'(p) - (1 - p^2) F'(p) \} \text{ (VIII, 393).}$$

$$20) \int Sin x \cdot \sqrt{1 - p^2 Cos^2 x} \frac{dx}{x} = E'(p) =$$

$$21) \int Tg x \cdot \sqrt{1 - p^2 Cos^2 x} \frac{dx}{x} \text{ (VIII, 393).}$$

$$22) \int Tg x \cdot \sqrt{1 - p^2 Cos^2 2x} \frac{dx}{x} = E'(p) \text{ (VIII, 393*)}.$$

$$23) \int Sin x \cdot Cos x \cdot \sqrt{1 - p^2 Cos^2 x} \frac{dx}{x} = \frac{1}{3p^2} \{ (2p^2 - 1) E'(p) + (1 - p^2) F'(p) \} \text{ (VIII, 393).}$$

$$24) \int Sin x \cdot Cos^2 x \cdot \sqrt{1 - p^2 Cos^2 x} \frac{dx}{x} = \frac{1}{3p^2} \{ (2p^2 - 1) E'(p) + (1 - p^2) F'(p) \} \text{ (VIII, 393).}$$

F. Alg. rat. fract. à dén. x ;

Circ. Dir. en num. à forme irrat.

TABLE 154, suite.

Lim. 0 et ∞ .

$$25) \int Tg x \cdot \cos^2 2x \cdot \sqrt{1-p^2 \cos^2 2x} \frac{dx}{x} = \frac{1}{3p^2} \{ (2p^2 - 1) E'(p) + (1-p^2) F'(p) \} \text{ (VIII, 393*)}.$$

$$26) \int \sin^2 x \cdot \sqrt{1-p^2 \cos^2 x} \frac{dx}{x} = \frac{1}{3p^2} \{ (1+p^2) E'(p) - (1-p^2) F'(p) \} \text{ (VIII, 393)}.$$

$$27) \int \sin^2 x \cdot Tg x \cdot \sqrt{1-p^2 \cos^2 x} \frac{dx}{x} = \frac{1}{3p^2} \{ (1+p^2) E'(p) - (1-p^2) F'(p) \} \text{ (VIII, 393)}.$$

$$28) \int \sin^2 x \cdot \cos x \cdot \sqrt{1-p^2 \cos^2 2x} \frac{dx}{x} = \frac{1}{12p^2} \{ (1+p^2) E'(p) - (1-p^2) F'(p) \} \text{ (VIII, 393)}.$$

$$29) \int \sin x \cdot \sqrt{1-p^2 \cos^2 x} \frac{dx}{x} = \frac{1}{3} \{ (4-2p^2) E'(p) - (1-p^2) F'(p) \} \text{ (VIII, 393)}.$$

$$30) \int Tg x \cdot \sqrt{1-p^2 \cos^2 x} \frac{dx}{x} = \frac{1}{3} \{ (4-2p^2) E'(p) - (1-p^2) F'(p) \} \text{ (VIII, 393)}.$$

$$31) \int Tg x \cdot \sqrt{1-p^2 \cos^2 2x} \frac{dx}{x} = \frac{1}{3} \{ (4-2p^2) E'(p) - (1-p^2) F'(p) \} \text{ (VIII, 393)}.$$

F. Alg. rat. fract. à dén. x ;

Circ. Dir. en num. polynôme.

TABLE 155.

Lim. 0 et ∞ .

$$1) \int \{ \sin^2 qx - \sin^2 px \} \frac{dx}{x} = \frac{1}{2} l \frac{q}{p} \text{ (E. O. A.)}.$$

$$2) \int \{ \sin^{2a} qx - \sin^{2a} px \} \frac{dx}{x} = \frac{1}{2^{2a}} \frac{(a+1)^{a/2}}{1^{a/2}} l \frac{q}{p} \text{ (VIII, 273)}.$$

$$3) \int \{ \cos qx - \cos px \} \frac{dx}{x} = l \frac{p}{q} \text{ (VIII, 337)}.$$

$$4) \int \{ \cos^{2a} qx - \cos^{2a} px \} \frac{dx}{x} = l \frac{p}{q} \cdot \left\{ 1 - \frac{(a+1)^{a/2}}{4^{a/2}} \right\} \text{ (VIII, 273)}.$$

$$5) \int \{ \cos^{2a+1} qx - \cos^{2a+1} px \} \frac{dx}{x} = l \frac{p}{q} \text{ (VIII, 273)}.$$

$$6) \int \{ 3 - 4 \sin^2 qx \} \sin^2 qx \frac{dx}{x} = \frac{1}{2} l 2 \text{ (IV, 272)}.$$

$$7) \int \{ \cos \lambda - \cos b \lambda x \} \sin ax \frac{dx}{x} = \frac{1}{2} \pi (\cos \lambda - 1) [a > b \lambda > 0], = \frac{1}{2} \pi \cos \lambda [a < b \lambda < \infty] \text{ (IV, 272)}.$$

$$8) \int \{ \cos^a px \cdot \cos a px - \cos^a qx \cdot \cos a qx \} \frac{dx}{x} = \left(1 - \frac{a}{2^a} \right) l \frac{q}{p} \text{ (VIII, 273)}.$$

F. Alg. rat. fract. à dén. x ;
Circ. Dir. en num. polyn.

TABLE 155, suite.

Lim. 0 et ∞ .

$$9) \int \{ \cos(x^2) - \cos x \} \frac{dx}{x} = \frac{1}{2} A \text{ (VIII, 671).}$$

$$10) \int \{ \cos(x^4) - \cos(x^2) \} \frac{dx}{x} = \frac{1}{4} A \text{ (VIII, 671).}$$

$$11) \int \{ \cos(x^4) - \cos x \} \frac{dx}{x} = \frac{3}{4} A \text{ (VIII, 672).}$$

$$12) \int \{ \cos(x^{2^a}) - \cos x \} \frac{dx}{x} = (1 - 2^{-a}) A \text{ (VIII, 672).}$$

$$13) \int \{ \cos(x^p) - \cos(x^q) \} \frac{dx}{x} = \frac{p-q}{pq} A \text{ (VIII, 701*)}. \quad \text{TABLE 156.}$$

F. Alg. rat. fract. à dén. x^a pour a spécial;
Circ. Dir. en num. à un fact. monôme.

TABLE 156.

Lim. 0 et ∞ .

$$1) \int \sin^2 qx \frac{dx}{x^2} = \frac{1}{2} q \pi \text{ (VIII, 365).}$$

$$2) \int \sin^2 qx \frac{dx}{x^2} = \frac{3}{4} q \ln 3 \text{ (E. O. A.).}$$

$$3) \int \sin^4 qx \frac{dx}{x^2} = \frac{1}{4} q \pi \text{ (E. O. A.).}$$

$$4) \int \sin^4 qx \frac{dx}{x^2} = \frac{5}{16} q \{ 3 \ln 3 - \ln 5 \} \text{ (E. O. A.).}$$

$$5) \int \sin^6 qx \frac{dx}{x^2} = \frac{3}{16} q \pi \text{ (IV, 273).}$$

$$6) \int \sin^6 qx \frac{dx}{x^2} = \frac{35}{256} q \pi \text{ (IV, 273).}$$

$$7) \int \sin^8 qx \frac{dx}{x^2} = \frac{3}{8} q^2 \pi \text{ (VIII, 366).}$$

$$8) \int \sin^8 qx \frac{dx}{x^2} = q^2 \ln 2 \text{ (E. O. A.).}$$

$$9) \int \sin^8 qx \frac{dx}{x^2} = \frac{5}{32} q^2 \pi \text{ (E. O. A.).}$$

$$10) \int \sin^8 qx \frac{dx}{x^2} = \frac{3}{16} q^2 (8 \ln 2 - 3 \ln 3) \text{ (IV, 273).}$$

$$11) \int \sin^4 qx \frac{dx}{x^4} = \frac{1}{3} q^2 \pi \text{ (E. O. A.).}$$

$$12) \int \sin^4 qx \frac{dx}{x^4} = \frac{5}{96} q^2 (25 \ln 5 - 27 \ln 3) \text{ (IV, 273).}$$

$$13) \int \sin^6 qx \frac{dx}{x^4} = \frac{115}{384} q^2 \pi \text{ (IV, 273).}$$

$$14) \int \sin^6 qx \frac{dx}{x^4} = \frac{1}{16} q^2 (27 \ln 3 - 32 \ln 2) \text{ (IV, 273).}$$

F. Alg. rat. fract. à dén. x^a pour a spécial;
Circ. Dir. en num. à plus. fact. mon.

TABLE 157.

Lim. 0 et ∞ .

$$1) \int \sin qx \cdot \sin px \frac{dx}{x^2} = \frac{1}{2} p \pi [p \leq q], = \frac{1}{2} q \pi [p \geq q] \text{ (VIII, 365).}$$

$$2) \int \sin^2 qx \cdot \sin px \frac{dx}{x^2} = \frac{2q+p}{8} \ln(2q+p)^2 - \frac{2q-p}{8} \ln(2q-p)^2 - \frac{1}{2} p \ln p \text{ (E. O. A.).}$$

$$3) \int \sin^2 qx \cdot \sin^2 px \frac{dx}{x^2} = \frac{1}{4} p \pi [q \geq p], = \frac{1}{4} q \pi [q \leq p] \text{ (E. O. A.)}.$$

$$4) \int \sin^2 qx \cdot \sin^2 px \frac{dx}{x^2} = \frac{2q-3p}{32} l(2q-3p)^2 - \frac{2q+3p}{32} l(2q+3p)^2 + \frac{2q+p}{32} 3 l(2q+p)^2 - \\ - \frac{2q-p}{32} 3 l(2q-p)^2 + \frac{3}{8} p l p \text{ (E. O. A.)}.$$

$$5) \int \sin^2 qx \cdot \cos^2 px \frac{dx}{x^2} = 0 [p \geq 2q], = \frac{2q-p}{4} \pi [p < 2q] \text{ (E. O. A.)}.$$

$$6) \int \sin^2 qx \cdot \cos^2 px \frac{dx}{x^2} = \frac{2q-p}{4} \pi [q > p], = \frac{1}{4} q \pi [q \leq p] \text{ V. T. 156, N. 1 et T. 157, N. 3.}$$

$$7) \int \sin^2 qx \cdot \cos^2 px \frac{dx}{x^2} = \frac{p+3q}{16} l(p+3q)^2 - \frac{p-3q}{16} l(p-3q)^2 - \frac{p+q}{16} 3 l(p+q)^2 + \\ + \frac{p-q}{16} 3 l(p-q)^2 \text{ (E. O. A.)}.$$

$$8) \int \sin qx \cdot \sin rx \cdot \sin px \frac{dx}{x^2} = \frac{q+r+p}{8} l(q+r+p)^2 - \frac{q-r+p}{8} l(q-r+p)^2 - \\ - \frac{q+r-p}{8} l(q+r-p)^2 + \frac{q-r-p}{8} l(q-r-p)^2 \text{ (E. O. A.)}.$$

$$9) \int \sin^2 qx \cdot \sin rx \cdot \sin px \frac{dx}{x^2} = \frac{1}{2} r \pi [2q > p+r=2r], = \frac{1}{4} q \pi [2q \leq r+p=2r], = \\ = \frac{1}{4} p \pi [2q \geq r+p > 2p], = \frac{2q-r+p}{8} \pi [r+p > 2q > r-p], = \\ = 0 [2q \leq r-p > 0] \text{ (E. O. A.)}.$$

$$10) \int \sin^2 qx \cdot \sin^2 rx \cdot \sin px \frac{dx}{x^2} = \frac{2q-2r-p}{32} l(2q-2r-p)^2 - \frac{2q+2r+p}{32} l(2q+2r+p)^2 + \\ + \frac{2q+2r-p}{32} l(2q+2r-p)^2 - \frac{2q-2r+p}{32} l(2q-2r+p)^2 + \frac{2q+p}{16} l(2q+p)^2 - \\ - \frac{2q-p}{16} l(2q-p)^2 + \frac{2r+p}{16} l(2r+p)^2 - \frac{2r-p}{16} l(2r-p)^2 - \frac{1}{4} p l p \text{ (E. O. A.)}.$$

$$11) \int \sin^2 srx \cdot \cot rx \cdot \sin x \frac{dx}{x^2} = \frac{\pi}{4} (2s-1) \text{ (H, 28).} \quad 12) \int \sin^2 2srx \cdot \operatorname{Tgr} x \cdot \sin x \frac{dx}{x^2} = \frac{\pi}{4} \text{ (H, 28).}$$

$$13) \int \cos^s rx \cdot \cos^{s_1} r_1 x \dots \sin \{(sr+s_1r_1+\dots)x\} \cdot \sin x \frac{dx}{x^2} = \frac{\pi}{2^{s+s_1+\dots}} (2^{s+s_1+\dots}-1) \text{ (H, 12).}$$

$$14) \int \cos^q px \cdot \cos^{q_1} p_1 x \dots \sin^s rx \cdot \sin^{s_1} r_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (qp + q_1 p_1 + \dots + sr + s_1 r_1 + \dots) x \right\} \cdot \sin x \frac{dx}{x^2} = \frac{-\pi}{2^{1+q+q_1+\dots+s+s_1+\dots}} \dots (H, 18).$$

$$15) \int \cos^s rx \cdot \cos^{s_1} r_1 x \dots \sin tx \cdot \sin x \frac{dx}{x^2} = \frac{\pi}{2} [t > sr + s_1 r_1 + \dots] (H, 24).$$

$$16) \int \cos^q px \cdot \cos^{q_1} p_1 x \dots \sin^s rx \cdot \sin^{s_1} r_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - tx \right\} \cdot \sin x \frac{dx}{x^2} = 0$$

$$[t > qp + q_1 p_1 + \dots + sr + s_1 r_1 + \dots] (H, 24).$$

$$17) \int \sin^2 qx \cdot \sin px \frac{dx}{x^3} = \frac{1}{2} q^2 \pi [p \geq 2q], = \frac{1}{8} \pi (4pq - p^2) [p \leq 2q] (VIII, 366).$$

$$18) \int \sin^2 qx \cdot \sin^3 px \frac{dx}{x^3} = \frac{3}{16} p^2 \pi [2q > 3p], = \frac{1}{12} q^2 \pi [2q = 3p], = \frac{1}{32} \{6p^2 - (3p - 2q)^2\} \pi$$

$$[3p > 2q > p], = \frac{1}{4} q^2 \pi [p \geq 2q] (E. O. A.).$$

$$19) \int \sin^2 qx \cdot \cos px \frac{dx}{x^3} = 0 [p \geq 3q], = \frac{1}{16} (3q - p)^2 \pi [3q > p > q], = \frac{1}{4} p^2 \pi [q = p], =$$

$$= \frac{1}{8} (3q^2 - p^2) \pi [q > p] (E. O. A.).$$

$$20) \int \sin qx \cdot \sin px \cdot \sin rx \frac{dx}{x^3} = \frac{1}{2} pq\pi [r \geq p + q], = \frac{1}{4} \pi (pq + pr + qr) - \frac{1}{8} \pi (p^2 + q^2 + r^2)$$

$$[r < p + q]; [p < q < r] (VIII, 366).$$

$$21) \int \sin^2 2srx \cdot \operatorname{Tgr} x \cdot \sin^2 x \frac{dx}{x^3} = \frac{3}{8} \pi (H, 29).$$

$$22) \int \sin^2 srx \cdot \operatorname{Cotr} x \cdot \sin^2 x \frac{dx}{x^3} = \frac{\pi}{8} (4s - 3) (H, 28).$$

$$23) \int \cos^s rx \cdot \cos^{s_1} r_1 x \dots \sin \left\{ (sr + s_1 r_1 + \dots) x \right\} \cdot \sin^2 x \frac{dx}{x^3} = \frac{\pi}{2^{1+s+s_1+\dots}} \left\{ 2^{s+s_1+\dots} - \frac{1}{4} (s + s_1 + \dots) - 1 \right\}$$

$$(H, 12).$$

$$24) \int \cos^q px \cdot \cos^{q_1} p_1 x \dots \sin^s rx \cdot \sin^{s_1} r_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (qp + q_1 p_1 + \dots + sr + s_1 r_1 + \dots) x \right\} \cdot \sin^2 x \frac{dx}{x^3} = \frac{-\pi}{2^{1+q+q_1+\dots+s+s_1+\dots}} (4 + q + q_1 + \dots - s - s_1 - \dots) (H, 14).$$

F. Alg. rat. fract. à dén. x^a pour a spécial; TABLE 157, suite.
Circ. Dir. en num. à plus. fact. mon.

Lim. 0 et ∞ .

$$25) \int \cos^s x \cos^{s_1} x \dots \sin^t x \sin^{t_1} x \frac{dx}{x^3} = \frac{\pi}{2^{s+s_1+\dots} \{2^{s+s_1+\dots} - 1\}} [t > sr + s_1 r_1 + \dots] \quad (\text{H, 24}).$$

$$26) \int \cos^q x \cos^{q_1} x \dots \sin^r x \sin^{r_1} x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - tx \right\} \sin^2 x \frac{dx}{x^3} = \\ = \frac{\pi}{2^{s+s_1+\dots+s+s_1+\dots}} [t > qp + q_1 p_1 + \dots + sr + s_1 r_1 + \dots] \quad (\text{H, 24}).$$

$$27) \int \sin^q x \sin^p x \frac{dx}{x^4} = \frac{1}{6} p^2 \pi (3q - p) [p \leq q], = \frac{1}{6} q^2 \pi (3p - q) [p \geq q] \quad (\text{IV, 274}).$$

$$28) \int \sin^q x \sin^p x \frac{dx}{x^4} = \frac{1}{2} q^2 \pi [p > 3q], = \frac{1}{48} \pi \{24q^2 - (3q - p)^2\} [q \leq p \leq 3q], = \\ = \frac{1}{48} \pi \{24pq^2 - (p + q)^2\} [p \leq q] \quad (\text{IV, 274}).$$

F. Alg. rat. fract. à dén. x^a pour a spécial; TABLE 158.
Circ. Dir. en num. polynôme.

Lim. 0 et ∞ .

$$1) \int (1 - \cos qx) \frac{dx}{x^2} = \frac{1}{2} q \pi \quad \text{V. T. 156, 2) } \int (\cos qx - \cos px) \frac{dx}{x^2} = \frac{1}{2} (p - q) \pi \quad \text{V. T. 158, N. 1.}$$

$$3) \int (\sin x - x \cos x) \frac{dx}{x^2} = 1 \quad (\text{IV, 275}). \quad 4) \int (p \cos qx - rx \sin qx - p) \frac{dx}{x^2} = (r - pq) \frac{\pi}{2} \quad (\text{IV, 275}).$$

$$5) \int (\sin qx - qx \cos qx) \frac{dx}{x^2} = \frac{1}{4} q^2 \pi \quad (\text{VIII, 580}). \quad 6) \int (x^2 - \sin^2 x) \frac{dx}{x^2} = \frac{13}{32} \pi \quad (\text{IV, 275}).$$

$$7) \int (1 - \cos^{2a-1} x) \frac{dx}{x^2} = \frac{a\pi}{2^{1/a}} \binom{2a}{a} = \quad 8) \int (1 - \cos^{2a} x) \frac{dx}{x^2} \quad \text{Stefan, Schl. Z. 7. 357.}$$

F. Alg. rat. fract. à dén. x^a pour a général; TABLE 159.
Circ. Dir. en num.

Lim. 0 et ∞ .

$$1) \int \sin qx \frac{dx}{x^p} = \frac{\pi}{2 \Gamma(p)} q^{p-1} \operatorname{Cosec} \frac{1}{2} p \pi [0 < p < 2], \quad (\text{VIII, 442}) = \infty [p \geq 2] \quad (\text{IV, 276}).$$

$$2) \int \sin^b x \frac{dx}{x^a} = \frac{(-1)^{\frac{1}{2}(a+b)-1}}{2^{b-1} 1^{a-1/1}} \frac{\pi^{\frac{1}{2}(b-1)}}{2} \sum_0^{b-1} (-1)^n \binom{b}{n} (b-2n)^{a-1} \left[\begin{matrix} a \text{ et } b \\ \text{impairs} \end{matrix} \right], = \frac{(-1)^{\frac{1}{2}(a+b)} \pi}{2^{b-1} 1^{a-1/1}} \frac{\pi^{\frac{1}{2}(b-1)}}{2} \\ \sum_0^{\frac{1}{2}b-1} (-1)^n \binom{b}{n} (b-2n)^{a-1} \left[\begin{matrix} a \text{ et } b \\ \text{pairs} \end{matrix} \right], = \frac{(-1)^{\frac{1}{2}(a+b-1)} \pi^{\frac{1}{2}b-1}}{2^{b-1} 1^{a-1/1}} \sum_0^{\frac{1}{2}b-1} (-1)^n \binom{b}{n} (b-2n)^{a-1}$$

$$\begin{aligned} l(b-2n) \left[\begin{matrix} a \text{ impair,} \\ b \text{ pair} \end{matrix} \right] &= \frac{(-1)^{\frac{1}{2}(a+b-1)} \frac{1}{2}(b-1)}{2^b \Gamma(a) \sin \frac{1}{2} a \pi} \sum_0^{b-1} (-1)^n \binom{b}{n} (b-2n)^{a-1} l(b-2n) \left[\begin{matrix} a \text{ pair,} \\ b \text{ impair} \end{matrix} \right], = \\ &= \frac{(-1)^{\frac{1}{2}(b-1)} \pi}{2^b \Gamma(a) \sin \frac{1}{2} a \pi} \sum_0^{b-1} (-1)^n \binom{b}{n} (b-2n)^{a-1} [0 < a < 1, b \text{ imp.}], = \infty [0 < a < 1, b \text{ pair}], = \\ &= \frac{(-1)^{\frac{1}{2}(b+c-1)} \pi}{2^b \Gamma(a) \sin \frac{1}{2} r \pi} \sum_0^{b-1} (-1)^n \binom{b}{n} (b-2n)^{a-1} [a = c + r, 0 < r < 1, b \text{ etc.} + 1 \text{ impairs}], = \\ &= \frac{(-1)^{\frac{1}{2}(b+c-1)} \pi}{2^b \Gamma(a) \sin \frac{1}{2} r \pi} \sum_0^{b-1} (-1)^n \binom{b}{n} (b-2n)^{a-1} [a = c + r, 0 < r < 1, b \text{ et } c + 1 \text{ pairs}], = \\ &= \frac{(-1)^{\frac{1}{2}(b+c)} \pi}{2^b \Gamma(a) \cos \frac{1}{2} r \pi} \sum_0^{b-1} (-1)^n \binom{b}{n} (b-2n)^{a-1} [a = c + r, 0 < r < 1, b \text{ et } c \text{ impairs}], = \\ &= \frac{(-1)^{\frac{1}{2}(b+c)} \pi}{2^b \Gamma(a) \cos \frac{1}{2} r \pi} \sum_0^{b-1} (-1)^n \binom{b}{n} (b-2n)^{a-1} [a = c + r, 0 < r < 1, b \text{ et } c \text{ pairs}] \end{aligned}$$

Schlömilch, Schl. Z. 5, 286.

$$3) \int \cos qx \frac{dx}{x^p} = \frac{\pi}{2 \Gamma(p)} q^{p-1} \sec \frac{1}{2} p \pi [p^2 < 1], \text{ (VIII, 442)} = \infty [p^2 > 1] \text{ (IV, 277).}$$

$$4) \int \cos \left(\frac{1}{2} (p+1) \pi + qx \right) \frac{dx}{x^{p+1}} = 0 \text{ (IV, 278).}$$

$$5) \int \cos \left(\frac{1}{2} (p+1) \pi - qx \right) \frac{dx}{x^{p+1}} = \frac{\pi q^p}{\Gamma(p+1)} \text{ (IV, 278).}$$

$$6) \int \cos \left(\frac{1}{2} p \pi + qx \right) \frac{dx}{x^{p+1}} = -\frac{1}{p} q^p \Gamma(1-p) \text{ Lobatto, N. V. Amst. 6, 1.}$$

$$7) \int \sin qx \sin x \frac{dx}{x^p} = \frac{\pi}{4 \Gamma(p)} \sec \frac{1}{2} p \pi \cdot \{(1-q)^{p-1} - (1+q)^{p-1}\} [q < 1], = \frac{\pi}{4 \Gamma(p)} \sec \frac{1}{2} p \pi \cdot \{(q-1)^{p-1} - (1+q)^{p-1}\} [q > 1] \text{ (IV, 278).}$$

$$8) \int \cos qx \sin x \frac{dx}{x^p} = \frac{\pi}{4 \Gamma(p)} \operatorname{cosec} \frac{1}{2} p \pi \cdot \{(1-q)^{p-1} + (1+q)^{p-1}\} [q < 1], = \frac{\pi}{4 \Gamma(p)} \operatorname{cosec} \frac{1}{2} p \pi \cdot \{(q+1)^{p-1} - (q-1)^{p-1}\} [q > 1] \text{ (IV, 278).}$$

$$9) \int \sin^p x \sin \{(p-1)x\} \frac{dx}{x^a} = (-1)^{\frac{p-a-1}{2}} \frac{\pi}{2^p \Gamma(a-1/2)}$$

$$10) \int \sin^p x \cos \{(p-1)x\} \frac{dx}{x^a} = (-1)^{\frac{p-a}{2}} \frac{\pi}{2^p \Gamma(a-1/2)}$$

$$11) \int \sin^p x \cos \{(p-2)x\} \frac{dx}{x^a} = (-1)^{\frac{p-a}{2}} \frac{\pi}{2^{p-a+1} \Gamma(a-1/2)}$$

Sur 9) à 11) voyez Bronwin, L. & N. Phil. Mag. 24, 491.

$$12) \int \left(\frac{\sin x}{x} \right)^a \frac{\sin ax}{x} dx = \frac{1}{2} \pi \quad (\text{IV, 278}).$$

$$13) \int \left(\frac{\sin x}{x} \right)^a \frac{\sin aqx}{x} dx = \frac{1}{2} \pi \left\{ 1 - \frac{1}{2^{a-1} 1^{a/1}} \sum_0^{\frac{1}{2}(1-q)a} (-1)^n \frac{a^{n-1}}{1^{n/1}} (a - aq - 2n)^a \right\} \quad (\text{IV, 278}).$$

$$14) \int \left(\frac{\sin x}{x} \right)^a \cdot \cos bx dx = 0 \quad [b \geq a] \quad (\text{IV, 278}).$$

$$15) \int \left(\frac{\sin x}{x} \right)^a \cdot \cos aqx dx = \frac{\pi}{2^{a-1}} \sum_0^{\frac{1}{2}(1 \pm a)q} (-1)^n \frac{a^{n-1}}{1^{a-1/1} 1^{n/1}} (a \pm aq - 2n)^{a-1} \quad (\text{IV, 278}).$$

$$16) \int \left(\frac{\sin x}{x} \right)^a \cdot \cos qx dx = \frac{\pi}{1^{a/1} 2^a} \sum_0^{\infty} (-1)^n \binom{a}{n} (q + a - 2n)^{a-1} \quad (\text{IV, 278}).$$

$$17) \int \sin^a x \cdot \sin 2qx \frac{dx}{x^{a+1}} = (-1)^a \frac{\pi}{2^{a+1}} [2q < a], = 0 \left[\begin{matrix} 2q > a, \\ q \text{ entier} \end{matrix} \right] \quad (\text{IV, 279}).$$

$$18) \int \sin^a x \cdot \sin 2qx \frac{dx}{x^{b+1}} = \frac{\pi}{2^{a+1} 1^{b/1}} \sec\left(\frac{a+b}{2}\pi\right) \cdot \Delta^a \cdot (2q-a)^b [2q < a], = \frac{\pi}{2^{a+1} 1^{b/1}} \sec\left(\frac{a+b}{2}\pi\right) \cdot \left\{ \sum_0^{\infty} (-1)^n \binom{a}{n} (a + 2q - 2n)^b - \sum_0^{\infty} (-1)^n \binom{a}{n} (a - 2q - 2n)^b \right\} [2q > a], = \frac{(-1)^{\frac{1}{2}(a+b-1)}}{2^a 1^{b/1}} \Delta^a \cdot \{(2q-a)^b \ell(2q-a)\} [a+b \text{ impair}] \quad (\text{IV, 279}).$$

$$19) \int \sin^a x \cdot \cos 2qx \frac{dx}{x^{b+1}} = \frac{-\pi}{2^{b+1} 1^{b/1}} \operatorname{Cosec}\left(\frac{a+b}{2}\pi\right) \cdot \Delta^a \cdot (2q-a)^b [2q > a], = \frac{-\pi}{2^{a+1} 1^{b/1}} \operatorname{Cosec}\left(\frac{a+b}{2}\pi\right) \cdot \left\{ \sum_0^{\infty} (-1)^n \binom{a}{n} (a + 2q - 2n)^b + \sum_0^{\infty} (-1)^n \binom{a}{n} (a - 2q - 2n)^b \right\} [2q < a], = \frac{(-1)^{\frac{1}{2}(a+b)}}{2^a 1^{b/1}} \Delta^a \cdot \{(2q-a)^b \ell(2q-a)\} [a+b \text{ pair}] \quad (\text{IV, 279, 280}).$$

$$20) \int \left(\frac{\sin x}{x} \right)^{a-1} \cdot \sin ax \cdot \cos x \frac{dx}{x} = \frac{1}{2} \pi \quad (\text{IV, 280}).$$

$$21) \int \left(\frac{\sin x}{x} \right)^{2a} \cdot \sin 2ax \cdot \operatorname{Tg} x \frac{dx}{x} = (-1)^{a-1} \frac{2^{2a} - 1}{1^{2a/1}} \pi 2^{a-1} B_{2a-1}$$

Hamilton, L. & E. Phil. Mag. 23, 360.

$$22) \int \sin\{(2q+a)x\} \cdot \sin^a x \frac{dx}{x^{b+1}} = \frac{2^{b-a-1}}{1^{b/1}} \pi \sec\left(\frac{a+b}{2}\pi\right) \cdot \Delta^a \cdot q^b [a > b] \quad (\text{IV, 280}).$$

$$23) \int \cos\{(2q+a)x\} \cdot \sin^a x \frac{dx}{x^{b+1}} = -\frac{2^{b-a-1}}{1^{b/1}} \pi \operatorname{Cosec}\left(\frac{a+b}{2}\pi\right) \cdot \Delta^a \cdot q^b [a > b] \quad (\text{IV, 280}).$$

$$24) \int \sin\left\{(2p+a)x + \frac{1}{2}a\pi\right\} \cdot \sin^a x \frac{dx}{x^{q+1}} = \frac{\pi}{2^{a-q+1} \Gamma(q+1)} \operatorname{Cosec}\left(\frac{q+1}{2}\pi\right) \cdot \Delta^a \cdot p^q \quad (\text{IV, 280})$$

$$25) \int \cos \left\{ (2p+a)x + \frac{1}{2} a\pi \right\} \cdot \sin^a x \frac{dx}{x^{q+1}} = \frac{\pi}{2^{a-q+1} \Gamma(q+1)} \sec \left(\frac{q+1}{2} \pi \right) \cdot \Delta^a \cdot p^q \quad (\text{IV}, 280).$$

$$26) \int \cos \left\{ 2qx + (b-a+1) \frac{\pi}{2} \right\} \cdot \sin^a x \frac{dx}{x^{b+1}} = \frac{\pi}{2^a \Gamma(b+1)} \sum_0^{\infty} (-1)^n \binom{a}{n} (a-2q-2n)^b [a^2 > 4q^2] \quad (\text{IV}, 280).$$

$$27) \int \left\{ \cos \left[\frac{1}{2} (r+1) \pi + 2(p+q)x \right] + \cos \left[\frac{1}{2} (r+1) \pi + 2(p-q)x \right] \right\} \frac{dx}{x^{r+1}} = 0 [p > q], = \\ = 2^r \pi \frac{(q-p)^r}{\Gamma(r+1)} [p < q] \quad (\text{IV}, 279).$$

$$28) \int \left(\frac{\sin x}{x} \right)^a \cdot \cos(bx \sqrt{a}) dx = \frac{\pi}{2^a \Gamma(a+1)} \sum_0^{\infty} (-1)^n \binom{a}{n} (a+b\sqrt{a}-2n)^{a-1} \quad (\text{IV}, 280).$$

$$1) \int \sin px \frac{dx}{q+x} = \sin pq \cdot \text{Ci}(pq) + \cos pq \cdot \left\{ \frac{1}{2} \pi - \text{Si}(pq) \right\} \quad (\text{VIII}, 289).$$

$$2) \int \cos px \frac{dx}{q+x} = -\cos pq \cdot \text{Ci}(pq) + \sin pq \cdot \left\{ \frac{1}{2} \pi - \text{Si}(pq) \right\} \quad (\text{VIII}, 289).$$

$$3) \int \sin px \frac{dx}{q^2+x^2} = \frac{1}{2q} \{ e^{-pq} \text{Ei}(pq) - e^{pq} \text{Ei}(-pq) \} \quad (\text{VIII}, 448).$$

$$4) \int \sin px \frac{x dx}{q^2+x^2} = \frac{1}{2} \pi e^{-pq} \quad (\text{VIII}, 519). \quad 5) \int \cos px \frac{dx}{q^2+x^2} = \frac{\pi}{2q} e^{-pq} \quad (\text{VIII}, 519).$$

$$6) \int \cos px \frac{x dx}{q^2+x^2} = -\frac{1}{2} \{ e^{pq} \text{Ei}(-pq) + e^{-pq} \text{Ei}(pq) \} \quad (\text{VIII}, 448).$$

$$7) \int \cos px \frac{x^2 dx}{q^2+x^2} = \infty \quad (\text{IV}, 284^*) =$$

$$8) \int \sin px \frac{x dx}{q^2+x^2} = \frac{\pi}{4q} \quad (\text{VIII}, 564).$$

$$9) \int \cot px \frac{x dx}{q^2+x^2} = \infty \quad (\text{VIII}, 564). \quad 10) \int \sin^2 px \frac{dx}{q^2+x^2} = \frac{\pi}{4q} (1 - e^{-2pq}) \quad (\text{VIII}, 333).$$

$$11) \int \cos^2 px \frac{dx}{q^2+x^2} = \frac{\pi}{4q} (1 + e^{-2pq}) \quad (\text{VIII}, 333).$$

$$12) \int \sin^{2a} x \frac{dx}{q^2+x^2} = \frac{(-1)^a \pi}{2^{2a+1} q} \left\{ (e^q - e^{-q})^{2a} - e^{2aq} \sum_0^a (-1)^n \binom{2a}{n} e^{-2nq} + \right. \\ \left. + e^{-2aq} \sum_0^a (-1)^n \binom{2a}{n} e^{2nq} \right\} \quad (\text{V}, 40).$$

$$13) \int \sin^{2a} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1}}{2^{2a+1}} \left\{ e^{-2aq} \sum_0^{2a} (-1)^n \binom{2a}{n} e^{2nq} Ei\{2q(a-n)\} + \right. \\ \left. + e^{2aq} \sum_0^{2a} (-1)^n \binom{2a}{n} e^{-2nq} Ei\{2q(n-a)\} \right\} \quad (\text{V}, 49).$$

$$14) \int \sin^{2a+1} x \frac{dx}{q^2 + x^2} = \frac{(-1)^{a-1}}{2^{2a+1} q} \left\{ e^{(2a+1)q} \sum_0^{2a+1} (-1)^n \binom{2a+1}{n} e^{-2nq} Ei\{q(2n-2a-1)\} + \right. \\ \left. + e^{-(2a+1)q} \sum_0^{2a+1} (-1)^{n-1} \binom{2a+1}{n} e^{2nq} Ei\{q(2a+1-2n)\} \right\} \quad (\text{V}, 38).$$

$$15) \int \sin^{2a+1} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1}}{2^{2a+1}} e^{-(2a+1)q} \left\{ (1 - e^{(2a+1-2)q}) (1 - e^{-2q})^{2a+1} - \right. \\ \left. - 2 \sum_0^a (-1)^n \binom{2a+1}{n} e^{2nq} \right\} \quad (\text{V}, 52).$$

$$16) \int \cos^{2a} x \frac{dx}{q^2 + x^2} = \frac{1}{2^{2a+1}} \frac{\pi}{q} \binom{2a}{a} + 2^{-2a} \frac{\pi}{q} \sum_1^a \binom{2a}{n+a} e^{-2nq} \quad (\text{V}, 22).$$

$$17) \int \cos^{2a-1} x \frac{dx}{q^2 + x^2} = \frac{1}{2^{2a-1}} \frac{\pi}{q} \sum_1^a \binom{2a-1}{n+a} e^{-(2n+1)q} \quad (\text{V}, 22).$$

$$18) \int \cos^n x \frac{x dx}{q^2 + x^2} = \frac{-1}{2^{a+1}} e^{-aq} \sum_0^a \binom{a}{n} e^{2nq} Ei\{q(a-2n)\} - \frac{1}{2^{a+1}} e^{aq} \sum_0^a \binom{a}{n} e^{-2nq} Ei\{q(2n-a)\} \\ (\text{V}, 26).$$

$$19) \int \operatorname{Tgr}^r p x \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} \operatorname{Sec} \frac{1}{2} r \pi \cdot \left(\frac{e^{pq} - e^{-pq}}{e^{pq} + e^{-pq}} \right)^r \quad (r^2 < 1) \quad \text{Cauchy, C. R. 23. 275.}$$

$$20) \int \sin \left(\frac{1}{2} r \pi - p x \right) \frac{x^{r-1} dx}{q^2 + x^2} = \frac{1}{2} \pi q^{r-1} e^{-pq} \quad [r < 2] \quad (\text{VIII}, 676).$$

$$21) \int \cos \left(\frac{1}{2} r \pi - p x \right) \frac{x^r dx}{q^2 + x^2} = \frac{1}{2} \pi q^{r-1} e^{-pq} \quad [r^2 < 1] \quad (\text{VIII}, 676*).$$

$$22) \int \sin(p \operatorname{Tgr}^{-1} x) \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} \left(e^{-p \frac{q^2 - q^2}{q^2 + q^2}} - e^{-p} \right) \quad (\text{VIII}, 421).$$

$$23) \int \sin 2 p x \frac{x dx}{q^2 + x^2} = \frac{\pi}{2 q^2} e^{-pq\sqrt{2}} \sin(pq\sqrt{2}) \quad (\text{VIII}, 527).$$

$$24) \int \sin 2 p x \frac{x^2 dx}{q^2 + x^2} = \frac{\pi}{2} e^{-pq\sqrt{2}} \cos(pq\sqrt{2}) \quad (\text{VIII}, 527).$$

$$25) \int \cos 2 p x \frac{dx}{q^2 + x^2} = \frac{\pi \sqrt{2}}{4 q^2} e^{-pq\sqrt{2}} \{ \cos(pq\sqrt{2}) + \sin(pq\sqrt{2}) \} \quad (\text{VIII}, 527).$$

$$26) \int \cos 2px \frac{x^2 dx}{q^2 + x^2} = \frac{\pi \sqrt{2}}{4q} e^{-p\sqrt{2}x} \{ \cos(pq\sqrt{2}) - \sin(pq\sqrt{2}) \} \text{ (VIII, 527).}$$

$$27) \int \sin px \frac{x dx}{1+x^{2a}} = \frac{\pi}{2a} e^{-p} - \frac{\pi^{\frac{1}{2}(a-1)}}{a} \sum_1 e^{-p \cos \frac{n\pi}{a}} \cos \left\{ \frac{2n\pi}{a} - p \sin \frac{n\pi}{a} \right\} \left[\begin{smallmatrix} a \\ \text{impair} \end{smallmatrix} \right], =$$

$$= \frac{\pi^{\frac{1}{2}(a-1)}}{a} \sum_1 e^{-p \cos \left(\frac{2n+1}{2a} \pi \right)} \cos \left\{ \frac{2n+1}{2a} \pi - p \sin \left(\frac{2n+1}{2a} \pi \right) \right\} \left[\begin{smallmatrix} a \\ \text{pair} \end{smallmatrix} \right] \text{ (IV, 288*)}.$$

$$28) \int \cos px \frac{dx}{1+x^{2a}} = \frac{\pi}{2a} e^{-p} - \frac{\pi^{\frac{1}{2}(a-1)}}{a} \sum_1 e^{-p \cos \frac{n\pi}{a}} \cos \left\{ \frac{n\pi}{a} - p \sin \frac{n\pi}{a} \right\} \left[\begin{smallmatrix} a \\ \text{impair} \end{smallmatrix} \right], =$$

$$= \frac{\pi^{\frac{1}{2}(a-1)}}{a} \sum_1 e^{-p \cos \left(\frac{2n+1}{2a} \pi \right)} \cos \left\{ \frac{2n+1}{2a} \pi - p \sin \left(\frac{2n+1}{2a} \pi \right) \right\} \left[\begin{smallmatrix} a \\ \text{pair} \end{smallmatrix} \right] \text{ (IV, 288).}$$

$$29) \int \cos px \cdot x^{b-1} \frac{dx}{q^a + x^a} = \frac{\pi}{a q^{a-b}} \sum_1 e^{-p q \sin \left(\frac{2n-1}{a} x \right)} \sin \left\{ \frac{2n-1}{a} b \pi + p q \cos \left(\frac{2n-1}{a} \pi \right) \right\}$$

$$[a \text{ pair}, b \text{ impair}, b < a+1], = 0 \left[\begin{smallmatrix} b \\ \text{pair} \end{smallmatrix} \right] \text{ (IV, 288).}$$

$$30) \int \sin (p\pi - r^a x^a) \frac{dx}{q^2 + x^2} = \frac{1}{2} e^{-qr^a} q^{2(p-1)} p \pi (1 + \cot p \pi) \text{ (IV, 288).}$$

$$1) \int \sin px \frac{dx}{q-x} = \sin pq \cdot \text{Ci}(pq) - \cos pq \cdot \left\{ \frac{1}{2} \pi + \text{Si}(pq) \right\} \text{ (VIII, 327).}$$

$$2) \int \cos px \frac{dx}{q-x} = \cos pq \cdot \text{Ci}(pq) + \sin pq \cdot \left\{ \frac{1}{2} \pi + \text{Si}(pq) \right\} \text{ (VIII, 327).}$$

$$3) \int \sin px \frac{dx}{q^2 - x^2} = \frac{1}{q} \{ \text{Ci}(pq) \cdot \sin pq - \text{Si}(pq) \cdot \cos pq \} \text{ (VIII, 327).}$$

$$4) \int \sin px \frac{x dx}{q^2 - x^2} = -\frac{1}{2} \pi \cos pq \text{ (VIII, 326).}$$

$$5) \int \cos px \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \sin pq \text{ (VIII, 326).}$$

$$6) \int \cos px \frac{x dx}{q^2 - x^2} = \text{Ci}(pq) \cdot \cos pq + \text{Si}(pq) \cdot \sin pq \text{ (VIII, 327).}$$

$$7) \int \tan px \frac{x dx}{q^2 - x^2} = \infty =$$

$$8) \int \cot px \frac{x dx}{q^2 - x^2} \text{ (VIII, 564).}$$

F. Alg. rat. fract. à dén. $q^a - x^a$; TABLE 161, suite.
Circ. Dir. en num. à un facteur.

Lim. 0 et ∞ .

- 9) $\int \operatorname{Cosec} p x \frac{x dx}{q^2 - x^2} = \infty$ (VIII, 564). 10) $\int \operatorname{Cos}^2 p x \frac{dx}{q^2 - x^2} = \frac{\pi}{4q} \operatorname{Sin} 2pq$ (IV, 286).
- 11) $\int \operatorname{Sin} \left(\frac{1}{2} r \pi - p x \right) \frac{x^{r-1} dx}{q^2 - x^2} = -\frac{1}{2} \pi q^{r-1} \operatorname{Cos} \left(\frac{1}{2} r \pi - p q \right)$ (VIII, 676).
- 12) $\int \operatorname{Sin} p x \frac{dx}{q^2 - x^2} = \frac{1}{4q^2} \{ 2 \operatorname{Ci}(pq) \cdot \operatorname{Sin} p q - 2 \operatorname{Si}(pq) \cdot \operatorname{Cos} p q + e^{-pq} \operatorname{Ei}(pq) - e^{pq} \operatorname{Ei}(-pq) \}$
V. T. 160, N. 3 et T. 161, N. 3.
- 13) $\int \operatorname{Sin} p x \frac{x dx}{q^2 - x^2} = \frac{\pi}{4q^2} (e^{-pq} - \operatorname{Cos} p q)$ V. T. 160, N. 4 et T. 161, N. 4.
- 14) $\int \operatorname{Sin} p x \frac{x^2 dx}{q^2 - x^2} = \frac{1}{4q} \{ 2 \operatorname{Ci}(pq) \cdot \operatorname{Sin} p q - 2 \operatorname{Si}(pq) \cdot \operatorname{Cos} p q - e^{-pq} \operatorname{Ei}(pq) + e^{pq} \operatorname{Ei}(-pq) \}$
V. T. 160, N. 3 et T. 161, N. 3.
- 15) $\int \operatorname{Sin} p x \frac{x^2 dx}{q^2 - x^2} = -\frac{\pi}{4} (e^{pq} + \operatorname{Cos} p q)$ V. T. 160, N. 4 et T. 161, N. 4.
- 16) $\int \operatorname{Cos} p x \frac{dx}{q^2 - x^2} = \frac{\pi}{4q^2} (e^{-pq} + \operatorname{Sin} p q)$ V. T. 160, N. 5 et T. 161, N. 5.
- 17) $\int \operatorname{Cos} p x \frac{x dx}{q^2 - x^2} = \frac{1}{4q^2} \{ 2 \operatorname{Ci}(pq) \cdot \operatorname{Cos} p q + 2 \operatorname{Si}(pq) \cdot \operatorname{Sin} p q - e^{-pq} \operatorname{Ei}(pq) - e^{pq} \operatorname{Ei}(-pq) \}$
V. T. 160, N. 6 et T. 161, N. 6.
- 18) $\int \operatorname{Cos} p x \frac{x^2 dx}{q^2 - x^2} = \frac{\pi}{4q} (\operatorname{Sin} p q - e^{-pq})$ V. T. 160, N. 5 et T. 161, N. 5.
- 19) $\int \operatorname{Cos} p x \frac{x^2 dx}{q^2 - x^2} = \frac{1}{4} \{ 2 \operatorname{Ci}(pq) \cdot \operatorname{Cos} p q + 2 \operatorname{Si}(pq) \cdot \operatorname{Sin} p q + e^{-pq} \operatorname{Ei}(pq) + e^{pq} \operatorname{Ei}(-pq) \}$
V. T. 160, N. 6 et T. 161, N. 6.
- 20) $\int \operatorname{Cos} p x \cdot x^{b-1} \frac{dx}{q^a - x^a} = \frac{\pi}{a q^{a-b}} \sum_{n=0}^{\frac{a-b}{2}-1} e^{-pq \operatorname{Sin} \frac{2n\pi}{a}} \operatorname{Sin} \left(\frac{2nb\pi}{a} + pq \operatorname{Cos} \frac{2n\pi}{a} \right)$ (IV, 288).
- 21) $\int \{ \operatorname{Cos}(p x^2) - \operatorname{Sin}(p x^2) \} \frac{dx}{1-x^2} = \frac{1}{4} \pi (\operatorname{Sin} p + \operatorname{Cos} p)$ (IV, 288).

F. Alg. rat. fract. à dén. $q^2 + x^2$;
Circ. Dir. en num. a un fact. $\operatorname{Sin}^a x$ et un autre.

TABLE 162.

Lim. 0 et ∞ .

- 1) $\int \operatorname{Sin} p x \cdot \operatorname{Sin} r x \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} e^{-pq} (e^{rq} - e^{-rq})$ [$0 < r \leq p$] (VIII, 333).
- 2) $\int \operatorname{Sin} p x \cdot \operatorname{Sin} r x \frac{x dx}{q^2 + x^2} = \frac{1}{4} e^{pq} \{ e^{rq} \operatorname{Ei}[-q(p+r)] - e^{-rq} \operatorname{Ei}[q(r-p)] \} - \frac{1}{4} e^{-pq}$
 $\{ e^{rq} \operatorname{Ei}[q(p-r)] - e^{-rq} \operatorname{Ei}[q(p+r)] \}$ [$p \leq r$], $= \infty$ [$p = r$] (VIII, 334).

$$3) \int \text{Sin } px \cdot \text{Cos } rx \frac{dx}{q^2 + x^2} = \frac{1}{4q} e^{-pq} \{ e^{rq} \text{Ei}[q(p-r)] + e^{-rq} \text{Ei}[q(r+p)] \} - \frac{1}{4q} e^{pq} \{ e^{rq} \text{Ei}[-q(p+r)] + e^{-rq} \text{Ei}[q(r-p)] \} \quad (\text{VIII}, 334).$$

$$4) \int \text{Sin } px \cdot \text{Cos } rx \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} e^{-pq} (e^{rq} + e^{-rq}) [0 < r < p], = \frac{1}{4} \pi e^{-2pq} [r = p], = \\ = \frac{1}{4} \pi e^{-rq} (e^{-pq} - e^{pq}) [p < r < \infty] \quad (\text{VIII}, 333).$$

$$5) \int \text{Sin } px \cdot \text{Cos}^2 rx \frac{x dx}{q^2 + x^2} = \frac{\pi}{8} \{ 2e^{-pq} + e^{-q(p+2r)} + e^{q(p-2r)} \} [p > 2r], = \frac{\pi}{8} \{ e^{-pq} + 2e^{-pq} \} \\ [p = 2r], = \frac{\pi}{8} \{ 2e^{-pq} + e^{-q(p+2r)} - e^{q(p-2r)} \} [p < 2r] \quad \text{V. T. 160, N. 4, 15.}$$

$$6) \int \text{Sin}^2 px \cdot \text{Cos}^2 rx \frac{dx}{q^2 + x^2} = \frac{\pi}{8q} \left\{ 1 - \frac{1}{2} e^{-2q(p+r)} + e^{-2qr} - \frac{1}{2} e^{2q(r-p)} - e^{-2pq} \right\} [p > r], = \\ = \frac{\pi}{16q} (1 - e^{-4pq}) [p = r], = \frac{\pi}{8q} \left\{ 1 - \frac{1}{2} e^{-2q(p+r)} + e^{-2qr} - \frac{1}{2} e^{2q(p-r)} - e^{-2pq} \right\} [p < r] \\ \text{V. T. 160, N. 10, 12.}$$

$$7) \int \text{Sin } 2srx \cdot \text{Cot } rx \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} (1 - e^{-2sqr}) \frac{1 + e^{-2qr}}{1 - e^{-2qr}} \quad (\text{H}, 83).$$

$$8) \int \text{Sin}^2 srx \cdot \text{Cot } rx \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} \frac{2e^{-2qr} - e^{-2sqr} - e^{-(s+1)2qr}}{1 - e^{-2qr}} \quad (\text{H}, 84).$$

$$9) \int \text{Sin } 4srx \cdot \text{Tg } rx \frac{dx}{q^2 + x^2} = -\frac{\pi}{2q} (1 - e^{-4sqr}) \frac{1 - e^{-2qr}}{1 + e^{-2qr}} \quad (\text{H}, 87).$$

$$10) \int \text{Sin}^2 2srx \cdot \text{Tg } rx \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} \frac{2e^{-2qr} + e^{-4sqr} - e^{-(2s+1)2qr}}{1 + e^{-2qr}} \quad (\text{H}, 87).$$

$$11) \int \text{Sin}^{2a-1} x \cdot \text{Sin} \{ (2a-1)x \} \frac{dx}{q^2 + x^2} = \frac{(-1)^{a-1}}{2^{2a}} \frac{\pi}{q} (1 - e^{-2q})^{2a-1} \quad (\text{V}, 31^*).$$

$$12) \int \text{Sin}^{2a-1} x \cdot \text{Sin} \{ (2a+1)x \} \frac{dx}{q^2 + x^2} = \frac{(-1)^{a-1}}{2^{2a}} \frac{\pi}{q} e^{-2q} (1 - e^{-2q})^{2a-1} \quad (\text{V}, 33).$$

$$13) \int \text{Sin}^{2a} x \cdot \text{Sin} \{ (2a-1)x \} \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} e^q \{ (1 - e^{-2q})^{2a} - 1 \} \quad (\text{V}, 54).$$

$$14) \int \text{Sin}^{2a} x \cdot \text{Sin } 2ax \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} \{ (1 - e^{-2q})^{2a} - 1 \} \quad (\text{V}, 32).$$

$$15) \int \text{Sin}^{2a} x \cdot \text{Sin} \{ (2a+2)x \} \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} e^{-2q} (1 - e^{-2q})^{2a} \quad (\text{V}, 33).$$

$$16) \int \sin^{2a} x \cdot \sin 4ax \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} e^{-2aq} (1 - e^{-2q})^{2a} \quad (\text{V, 51}).$$

$$17) \int \sin^{2a+1} x \cdot \sin 2ax \frac{dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1} q} (e^q - e^{-q}) \{ (1 - e^{-2q})^{2a} - 1 \} \quad (\text{V, 42}).$$

$$18) \int \sin^{2a+1} x \cdot \sin \{ (2a+1)3x \} \frac{dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1} q} e^{-2(2a+1)q} (1 - e^{-2q})^{2a+1} \quad (\text{V, 40}).$$

$$19) \int \sin^{2a} x \cdot \sin rx \frac{dx}{q^2 + x^2} = \frac{(-1)^a}{2^{2a+1} q} \left\{ e^{(2a-r)q} \sum_{n=0}^{2a} (-1)^n \binom{2a}{n} e^{-2nq} Ei[q(r-2a+2n)] + \right. \\ \left. + e^{(r-2a)q} \sum_{n=0}^{2a} (-1)^{n-1} \binom{2a}{n} e^{2nq} Ei[q(2a-r-2n)] \right\} \quad (\text{V, 37}).$$

$$20) \int \sin^{2a} x \cdot \sin rx \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} e^{-rq} (e^q - e^{-q})^{2a} [r > 2a], = \frac{(-1)^a \pi}{2^{2a+1}} \left\{ e^{-rq} (e^q - e^{-q})^{2a} - \right. \\ \left. - e^{(2a-r)q} \sum_{n=0}^{d-1} (-1)^n \binom{2a}{n} e^{-2nq} - e^{(r-2a)q} \sum_{n=0}^d (-1)^n \binom{2a}{n} e^{2nq} \right\} \left[\begin{matrix} r < 2a, \\ \text{entier} \end{matrix} \right], = \\ = \frac{(-1)^a \pi}{2^{2a+1}} \left\{ e^{-rq} (e^q - e^{-q})^{2a} - e^{(2a-r)q} \sum_{n=0}^d (-1)^n \binom{2a}{n} e^{-2nq} - e^{(r-2a)q} \sum_{n=0}^d (-1)^n \binom{2a}{n} e^{2nq} \right\} \left[\begin{matrix} r < 2a, \\ \text{fractionn.} \end{matrix} \right]; \left[d = \mathcal{L} \left(a - \frac{1}{2} r \right) \right] \quad (\text{V, 53}).$$

$$21) \int \sin^{2a+1} x \cdot \sin rx \frac{dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1} q} e^{-rq} (e^q - e^{-q})^{2a+1} [r > 2a+1], = \frac{(-1)^a \pi}{2^{2a+1} q} \\ \left\{ e^{-rq} (e^q - e^{-q})^{2a+1} - e^{(2a+1-r)q} \sum_{n=0}^d (-1)^n \binom{2a+1}{n} e^{-2nq} + e^{(r-2a-1)q} \sum_{n=0}^d (-1)^n \binom{2a+1}{n} e^{2nq} \right\} \left[\begin{matrix} r < 2a+1, \\ d = \mathcal{L} \frac{1}{2} (2a+1-r) \end{matrix} \right] \quad (\text{V, 42}).$$

$$22) \int \sin^{2a+1} x \cdot \sin rx \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1}}{2^{2a+1}} \left\{ e^{(r-2a-1)q} \sum_{n=0}^{2a+1} (-1)^n \binom{2a+1}{n} e^{2nq} Ei[q(2a+1-2n-r)] + \right. \\ \left. + e^{(2a+1-r)q} \sum_{n=0}^{2a+1} (-1)^n \binom{2a+1}{n} e^{-2nq} Ei[q(2n-2a-1+r)] \right\} \quad (\text{V, 48}).$$

$$23) \int \sin^{2a-1} x \cdot \cos \{ (2a-1)x \} \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a}} \{ (1 - e^{-2q})^{2a-1} - 1 \} \quad (\text{V, 32*}).$$

$$24) \int \sin^{2a-1} x \cdot \cos \{ (2a+1)x \} \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a}} e^{-2q} (1 - e^{-2q})^{2a-1} \quad (\text{V, 33}).$$

$$25) \int \sin^{2a} x \cdot \cos \{ (2a-1)x \} \frac{dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1} q} (e^q - e^{-q}) \{ (1 - e^{-2q})^{2a-1} - 1 \} \quad (\text{V, 42}).$$

$$26) \int \text{Sin}^{2a} x \cdot \text{Cos } 2ax \frac{dx}{q^2 + x^2} = \frac{(-1)^a}{2^{2a+1}} \frac{\pi}{q} (1 - e^{-2aq})^{2a} \quad (\text{V, 31}).$$

$$27) \int \text{Sin}^{2a} x \cdot \text{Cos} \{(2a+2)x\} \frac{dx}{q^2 + x^2} = \frac{(-1)^a}{2^{2a+1}} \frac{\pi}{q} e^{-2aq} (1 - e^{-2aq})^{2a} \quad (\text{V, 32}).$$

$$28) \int \text{Sin}^{2a} x \cdot \text{Cos } 4ax \frac{dx}{q^2 + x^2} = \frac{(-1)^a}{2^{2a+1}} \frac{\pi}{q} e^{-2aq} (1 - e^{-2aq})^{2a} \quad (\text{V, 40}).$$

$$29) \int \text{Sin}^{2a+1} x \cdot \text{Cos } 2ax \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+2}} e^{-aq} \{(1 - e^{-2aq})^{2a+1} - 1\} \quad (\text{V, 54}).$$

$$30) \int \text{Sin}^{2a+1} x \cdot \text{Cos} \{(2a+1)2x\} \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+2}} e^{-(2a+1)q} (1 - e^{-2aq})^{2a+1} \quad (\text{V, 51}).$$

$$31) \int \text{Sin}^{2a} x \cdot \text{Cos } rx \frac{dx}{q^2 + x^2} = \frac{(-1)^a}{2^{2a+1}} \frac{\pi}{q} e^{-rq} (e^q - e^{-q})^{2a} [r > 2a], = \frac{(-1)^a}{2^{2a+1}} \frac{\pi}{q} \left\{ e^{-rq} (e^q - e^{-q})^{2a} - e^{2a-rq} \sum_0^a (-1)^n \binom{2a}{n} e^{-2nq} + e^{r-2aq} \sum_0^a (-1)^n \binom{2a}{n} e^{2nq} \right\} \left[r < 2a, d = \mathcal{L}\left(a - \frac{1}{2}r\right) \right] \quad (\text{V, 42}).$$

$$32) \int \text{Sin}^{2a} x \cdot \text{Cos } rx \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1}}{2^{2a+1}} \left\{ e^{(r-2a)q} \sum_0^{2a} (-1)^n \binom{2a}{n} e^{2nq} \text{Ei}[q(2a-2n-r)] + e^{(2a-r)q} \sum_0^{2a} (-1)^{n-1} \binom{2a}{n} e^{-2nq} \text{Ei}[q(2n-2a+r)] \right\} \quad (\text{V, 48}).$$

$$33) \int \text{Sin}^{2a+1} x \cdot \text{Cos } rx \frac{dx}{q^2 + x^2} = \frac{(-1)^a}{2^{2a+2}} \frac{\pi}{q} \left\{ e^{(2a+1-r)q} \sum_0^{2a+1} (-1)^{n+1} \binom{2a+1}{n} e^{-2nq} \text{Ei}[q(r-2a-1+2n)] + e^{(r-2a-1)q} \sum_0^{2a+1} (-1)^n \binom{2a+1}{n} e^{2nq} \text{Ei}[q(2a+1-r-2n)] \right\} \quad (\text{V, 37}).$$

$$34) \int \text{Sin}^{2a+1} x \cdot \text{Cos } rx \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+2}} e^{-rq} (e^q - e^{-q})^{2a+1} [r > 2a+1], = \frac{(-1)^{a-1} \pi}{2^{2a+2}} \left\{ e^{-rq} (e^q - e^{-q})^{2a+1} - e^{(2a+1-r)q} \sum_0^{2a+1} (-1)^n \binom{2a+1}{n} e^{-2nq} - e^{(r-2a-1)q} \sum_0^{2a+1} (-1)^n \binom{2a+1}{n} e^{2nq} \right\} \left[r < 2a+1, \begin{matrix} \text{entier} \\ \text{fractionnaire} \end{matrix} \right], = \frac{(-1)^{a-1} \pi}{2^{2a+2}} \left\{ e^{-rq} (e^q - e^{-q})^{2a+1} - e^{(2a+1-r)q} \sum_0^{2a+1} (-1)^n \binom{2a+1}{n} e^{-2nq} - e^{(r-2a-1)q} \sum_0^{2a+1} (-1)^n \binom{2a+1}{n} e^{2nq} \right\} \left[d = \mathcal{L} \frac{1}{2} (2a-r+1) \right] \quad (\text{V, 54}).$$

$$1) \int \text{Cos} p x . \text{Cos} r x \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} e^{-pq} (e^{qr} + e^{-qr}) [0 < r \leq p] \text{ (VIII, 333)}.$$

$$2) \int \text{Cos} p x . \text{Cos} r x \frac{x dx}{q^2 + x^2} = \frac{1}{4} e^{pq} \{ e^{rq} \text{Ei}[-q(p+r)] + e^{-rq} \text{Ei}[q(r-p)] \} - \frac{1}{4} e^{-pq} \{ e^{rq} \text{Ei}[q(p-r)] + e^{-rq} \text{Ei}[q(p+r)] \} [p \geq r], = \infty [p = r] \text{ (VIII, 334)}.$$

$$3) \int \text{Cos}(p \text{Tg}^2 x) . \text{Cos} x \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} \left\{ \frac{1}{2} (e^q + e^{-q}) e^{-p \frac{e^q - e^{-q}}{e^q + e^{-q}}} - \frac{1}{2} (e^q - e^{-q}) e^{-p} \right\} \text{ (VIII, 420*)}.$$

$$4) \int \text{Cos}(p \text{Tg}^2 x) . \text{Tg} x \frac{x dx}{q^2 + x^2} = \frac{\pi}{e^q + e^{-q}} \left\{ \frac{1}{2} (e^q + e^{-q}) e^{-p} - \frac{1}{2} (e^q - e^{-q}) e^{-p \frac{e^q - e^{-q}}{e^q + e^{-q}}} \right\} \text{ (VIII, 421*)}.$$

$$5) \int \text{Cos}(p \text{Tg}^2 x) . \text{Cot} x \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} \left\{ \frac{e^q + e^{-q}}{e^q - e^{-q}} e^{-p \frac{e^q - e^{-q}}{e^q + e^{-q}}} - e^{-p} \right\} \text{ (VIII, 421*)}.$$

$$6) \int \text{Cos}^{a-1} x . \text{Sin} \{(a+1)x\} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^a} e^{-2q} (1 + e^{-2q})^{a-1} \text{ (V, 18)}.$$

$$7) \int \text{Cos}^a x . \text{Sin} \{(a-1)x\} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{a+1}} e^q (1 + e^{-2q})^a \text{ (V, 29)}.$$

$$8) \int \text{Cos}^n x . \text{Sin} a x \frac{dx}{q^2 + x^2} = \frac{1}{2^{n+1} q} \sum_1^n \binom{a}{n} \{ e^{-2nq} \text{Ei}(2nq) - e^{2nq} \text{Ei}(-2nq) \} \text{ (V, 17)}.$$

$$9) \int \text{Cos}^n x . \text{Sin} a x \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{n+1}} \{ (1 + e^{-2q})^n - 1 \} \text{ (VIII, 496)}.$$

$$10) \int \text{Cos}^n x . \text{Sin} \{(a+1)x\} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{n+1}} e^{-q} (1 + e^{-2q})^a \text{ (V, 29)}.$$

$$11) \int \text{Cos}^n x . \text{Sin} 3ax \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{n+1}} e^{-3aq} (1 + e^{-2q})^a \text{ (V, 27)}.$$

$$12) \int \text{Cos}^n x . \text{Sin} r x \frac{dx}{q^2 + x^2} = \frac{1}{2^{n+1} q} \left\{ e^{-(r-a)q} \sum_0^n \binom{a}{n} e^{-2nq} \text{Ei}[q(r-a+2n)] - e^{(r-a)q} \sum_0^n \binom{a}{n} e^{2nq} \text{Ei}[q(a-r-2n)] \right\} \text{ (V, 20)}.$$

$$13) \int \text{Cos}^n x . \text{Sin} r x \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{n+1}} e^{-rq} (e^{qs} + e^{-qs})^a [r > as], = \frac{\pi}{2^{n+1}} \{ e^{-rs} (e^{qs} + e^{-qs})^a -$$

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Circ. Dir. en num. à un fact. $\text{Cos}^a x$ et un autre.

TABLE 163, suite.

Lim. 0 et ∞ .

$$-e^{(a-r)q} \sum_0^{d-1} \binom{a}{n} e^{-2nq} - e^{(r-a)q} \sum_0^d \binom{a}{n} e^{2nq} \left\{ \left[\frac{r}{2} < a, \text{ entier} \right], = \frac{\pi}{2^{a+1}} \left\{ e^{-r} (e^q + e^{-q})^a - e^{-q} (e^q + e^{-q})^a \right\} \right. \\ \left. + e^{-q} (e^q + e^{-q})^a - e^{(a-r)q} \sum_0^d \binom{a}{n} e^{-2nq} - e^{(r-a)q} \sum_0^d \binom{a}{n} e^{2nq} \right\} \left[\frac{r}{2} < a, \text{ fract.} \right]; \left[d = \mathcal{C} \frac{as-r}{2s} \right] \\ \text{(VIII, 497).}$$

$$14) \int \text{Cos}^{a-1} x \cdot \text{Cos} \{(a+1)x\} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^a q} e^{-q} (1 + e^{-2q})^{a-1} \text{ (V, 18).}$$

$$15) \int \text{Cos}^a x \cdot \text{Cos} \{(a-1)x\} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{a+1} q} e^q (1 + e^{-2q})^a \text{ (V, 23).}$$

$$16) \int \text{Cos}^a x \cdot \text{Cos} ax \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{a+1} q} (1 + e^{-2q})^a \text{ (VIII, 495).}$$

$$17) \int \text{Cos}^a x \cdot \text{Cos} \{(a+1)x\} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{a+1} q} e^{-q} (1 + e^{-2q})^a \text{ (V, 22).}$$

$$18) \int \text{Cos}^a x \cdot \text{Cos} rx \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{a+1} q} e^{-r} (e^q + e^{-q})^a [r > as], = \frac{\pi}{2^{a+1} q} \left\{ e^{-r} (e^q + e^{-q})^a - e^{(a-r)q} \sum_0^d \binom{a}{n} e^{-2nq} + e^{(r-a)q} \sum_0^d \binom{a}{n} e^{2nq} \right\} \left[r < as, d = \mathcal{C} \frac{as-r}{2s} \right] \text{ (VIII, 496).}$$

$$19) \int \text{Cos}^a x \cdot \text{Cos} rx \frac{x dx}{q^2 + x^2} = \frac{-1}{2^{a+1}} \left\{ e^{(r-a)q} \sum_0^a \binom{a}{n} e^{2nq} E_i[q(a-r-2n)] + e^{(a-r)q} \sum_0^a \binom{a}{n} e^{-2nq} E_i[q(r-a+2n)] \right\} \text{ (V, 26).}$$

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Circ. Dir. en num. à 3 facteurs.

TABLE 164.

Lim. 0 et ∞ .

$$1) \int \text{Sin}^{2a} x \cdot \text{Sin} 2ax \cdot \text{Sin} px \frac{dx}{q^2 + x^2} = \frac{(-1)^a}{2^{2a+1}} \frac{\pi}{q} e^{-pq} (e^{2aq} - 1) (1 - e^{-2q})^{2a} [p \geq 4a], = \\ = \frac{(-1)^a \pi}{2^{2a+1}} \frac{\pi}{q} \left\{ (e^{pq} - e^{-pq}) (1 - e^{-2q})^{2a} - e^{pq} \sum_0^d (-1)^n \binom{2a}{n} e^{-2nq} + e^{-pq} \sum_0^d (-1)^n \binom{2a}{n} e^{2nq} \right\} \left[p < 4a, d = \mathcal{C} \frac{1}{2} p \right] \text{ (V, 34).}$$

$$2) \int \text{Sin}^{2a+1} x \cdot \text{Sin} \{(2a+1)x\} \cdot \text{Cos} px \frac{dx}{q^2 + x^2} = \frac{(-1)^{a+1}}{2^{2a+3}} \frac{\pi}{q} e^{-pq} (e^{(2a+1)q} - 1) (1 - e^{-2q})^{2a+1} \\ [p \geq 4a+2], = \frac{(-1)^a}{2^{2a+3}} \frac{\pi}{q} \left\{ (e^{pq} + e^{-pq}) (1 - e^{-2q})^{2a+1} - e^{pq} \sum_0^d (-1)^n \binom{2a+1}{n} e^{-2nq} + e^{-pq} \sum_0^d (-1)^n \binom{2a+1}{n} e^{2nq} \right\} \left[p < 4a+2, d = \mathcal{C} \frac{1}{2} p \right] \text{ (V, 35).}$$

$$3) \int \sin^{2a+1} x \cdot \cos \{(2a+1)x\} \cdot \sin px \frac{dx}{q^2 + x^2} = \frac{(-1)^a}{2^{2a+1}} \frac{\pi}{q} e^{-pq} (e^{(2a+1)q} + 1) (1 - e^{-2q})^{2a+1} \\ [p \geq 4a+2], = \frac{(-1)^{a-1}}{2^{2a+1}} \frac{\pi}{q} \left\{ (e^{pq} - e^{-pq}) (1 - e^{-2q})^{2a+1} - e^{pq} \sum_0^d (-1)^n \binom{2a+1}{n} \right. \\ \left. e^{-2nq} + e^{-pq} \sum_0^d (-1)^n \binom{2a+1}{n} e^{2nq} \right\} \left[p < 4a+2, d = \mathcal{L} \frac{1}{2} p \right] \text{ (V, 34).}$$

$$4) \int \sin^{2a} x \cdot \cos 2ax \cdot \cos px \frac{dx}{q^2 + x^2} = \frac{(-1)^a}{2^{2a+1}} \frac{\pi}{q} e^{-pq} (e^{2aq} + 1) (1 - e^{-2q})^{2a} [p \geq 4a], = \\ = \frac{(-1)^a}{2^{2a+1}} \frac{\pi}{q} \left\{ (e^{pq} + e^{-pq}) (1 - e^{-2q})^{2a} - e^{pq} \sum_0^d (-1)^n \binom{2a}{n} e^{-2nq} + e^{-pq} \right. \\ \left. \sum_0^d (-1)^n \binom{2a}{n} e^{2nq} \right\} \left[p < 4a, d = \mathcal{L} \frac{1}{2} p \right] \text{ (V, 35).}$$

$$5) \int \cos^{2a} x \cdot \sin 2ax \cdot \sin px \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{2a+1} q} e^{-pq} (e^{2aq} - 1) (1 + e^{-2q})^a [p \geq 2as], = \\ = \frac{\pi}{2^{2a+1} q} \left\{ (e^{pq} - e^{-pq}) (1 + e^{-2q})^a - e^{pq} \sum_0^d \binom{a}{n} e^{-2nq} + e^{-pq} \sum_0^d \binom{a}{n} e^{2nq} \right\} \\ \left[p < 2as, d = \mathcal{L} \frac{p}{2s} \right] \text{ (VIII, 496).}$$

$$6) \int \cos^a x \cdot \sin ax \cdot \sin px \frac{x dx}{q^2 + x^2} = \frac{1}{2^{a+1}} e^{pq} \sum_0^n \binom{a}{n} \{ e^{2nq} \text{Ei}[-q(p+2n)] - e^{-2nq} \\ \text{Ei}[q(2n-p)] \} - \frac{1}{2^{a+1}} e^{-pq} \sum_0^n \binom{a}{n} \{ e^{2nq} \text{Ei}[q(p-2n)] - e^{-2nq} \text{Ei}[q(2n+p)] \} \text{ (V, 24).}$$

$$7) \int \cos^a x \cdot \sin ax \cdot \cos px \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{a+1}} e^{-pq} (1 - e^{2aq}) (1 + e^{-2q})^a [p > 2as], = \\ = \frac{\pi}{2^{a+1}} \{ 1 - (1 - e^{-2aq}) (1 + e^{-2q})^a \} [p = 2as], = \frac{\pi}{2^{a+1}} \left\{ (e^{pq} + e^{-pq}) (1 + e^{-2q})^a - \right. \\ \left. - e^{pq} \sum_0^{d-1} \binom{a}{n} e^{-2nq} - e^{-pq} \sum_0^d \binom{a}{n} e^{2nq} \right\} \left[\begin{matrix} p < 2as, \\ \text{entier} \end{matrix} \right], = \frac{\pi}{2^{a+1}} \left\{ (e^{pq} + e^{-pq}) \right. \\ \left. (1 + e^{-2q})^a - e^{pq} \sum_0^d \binom{a}{n} e^{-2nq} - e^{-pq} \sum_0^d \binom{a}{n} e^{2nq} \right\} \left[\begin{matrix} p < 2as, \\ \text{fractionn.} \end{matrix} \right]; \left[d = \mathcal{L} \frac{p}{2s} \right] \\ \text{(VIII, 496).}$$

$$8) \int \cos^a x \cdot \cos ax \cdot \sin px \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{a+1}} e^{-pq} (1 + e^{2aq}) (1 + e^{-2q})^a [p > 2as], = \\ = \frac{\pi}{2^{a+1}} \{ (1 + e^{-2aq}) (1 + e^{-2q})^a - 1 \} [p = 2as], = \frac{\pi}{2^{a+1}} \left\{ (e^{-pq} - e^{pq}) (1 + e^{-2q})^a + \right. \\ \left. + e^{pq} \sum_0^{d-1} \binom{a}{n} e^{-2nq} + e^{-pq} \sum_0^d \binom{a}{n} e^{2nq} \right\} \left[\begin{matrix} p < 2as, \\ \text{entier} \end{matrix} \right], = \frac{\pi}{2^{a+1}} \left\{ (e^{-pq} - e^{pq}) \right. \\ \left. (1 + e^{-2q})^a + e^{pq} \sum_0^d \binom{a}{n} e^{-2nq} + e^{-pq} \sum_0^d \binom{a}{n} e^{2nq} \right\} \left[\begin{matrix} p < 2as, \\ \text{fractionn.} \end{matrix} \right]; \left[d = \mathcal{L} \frac{p}{2s} \right] \\ \text{(VIII, 495).}$$

$$9) \int \cos^a x \cdot \cos ax \cdot \cos px \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{a+1} q} \sigma^{-p} (1 + \sigma^{2a}) (1 + \sigma^{-2a})^a [p \geq 2a], =$$

$$= \frac{\pi}{2^{a+1} q} \left\{ (\sigma^p + \sigma^{-p}) (1 + \sigma^{-2a})^a - \sigma^p \sum_0^a \binom{a}{n} \sigma^{-2n} + \sigma^{-p} \sum_0^a \binom{a}{n} \sigma^{2n} \right\}$$

$$\left[p < 2a, d = \mathcal{L} \frac{p}{2a} \right] \text{ (VIII, 195).}$$

$$10) \int \cos^a x \cdot \cos ax \cdot \cos px \frac{x dx}{q^2 + x^2} = \frac{-1}{2^{a+1}} \sigma^p \sum_0^a \binom{a}{n} \{ \sigma^{2n} \text{Ei}[-q(p+2n)] + \sigma^{-2n} \text{Ei}[q(2n-p)] \}$$

$$- \frac{1}{2^{a+1}} \sigma^{-p} \sum_0^a \binom{a}{n} \{ \sigma^{2n} \text{Ei}[q(p-2n)] + \sigma^{-2n} \text{Ei}[q(p+2n)] \} \text{ (V, 24).}$$

$$11) \int (1 - \cos^2 rx \cdot \cos rx) \text{Tg } 2rx \frac{x dx}{q^2 + x^2} = \frac{\pi}{1 + \sigma^{-2r}} \{ \sigma^{-2r} + 2^{-1} (1 - \sigma^{-2r}) (1 + \sigma^{-2r})^{s+1} \}$$

$$\text{ (H, 146).}$$

$$12) \int \cos^2 rx \cdot \sin rx \cdot \text{Tg } 2rx \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} \frac{1 - \sigma^{-2r}}{1 + \sigma^{-2r}} \{ 2^{-1} (1 + \sigma^{-2r})^s - 1 \} \text{ (H, 146).}$$

$$13) \int (1 - \cos^2 rx \cdot \cos rx) \text{Cot } 2rx \frac{x dx}{q^2 + x^2} = \frac{\pi}{1 - \sigma^{-2r}} \{ \sigma^{-2r} - 2^{-1} (1 + \sigma^{-2r}) (1 + \sigma^{-2r})^s \} \text{ (H, 146).}$$

$$14) \int \cos^2 rx \cdot \sin rx \cdot \text{Cot } 2rx \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} \frac{1 + \sigma^{-2r}}{1 - \sigma^{-2r}} \{ 1 - 2^{-1} (1 + \sigma^{-2r})^s \} \text{ (H, 146).}$$

$$15) \int \cos^{s-1} rx \cdot \sin \{(s+1)rx\} \cdot \text{Tg } 2rx \frac{dx}{q^2 + x^2} = \frac{\pi}{2^s q} \frac{1 - \sigma^{-2r}}{1 + \sigma^{-2r}} \{ \sigma^{2r} (1 + \sigma^{-2r})^{s-1} - 2^s \}$$

$$\text{ (H, 165).}$$

$$16) \int \cos^{s-1} rx \cdot \cos \{(s+1)rx\} \cdot \text{Tg } 2rx \frac{x dx}{q^2 + x^2} = \frac{-\pi}{\sigma^{2r} + \sigma^{-2r}} \{ \sigma^{2r} + 2^{-1} (1 - \sigma^{-2r}) (1 + \sigma^{-2r})^s \} \text{ (H, 165).}$$

$$17) \int \cos^{s-1} rx \cdot \sin \{(s+1)rx\} \cdot \text{Cot } 2rx \frac{dx}{q^2 + x^2} = \frac{\pi}{2^s q} \frac{1 + \sigma^{-2r}}{1 - \sigma^{-2r}} \{ 2^{s-1} - (1 + \sigma^{-2r})^{s-1} \sigma^{-2r} \}$$

$$\text{ (H, 165).}$$

$$18) \int \cos^{s-1} rx \cdot \cos \{(s+1)rx\} \cdot \text{Cot } 2rx \frac{x dx}{q^2 + x^2} = \frac{-\pi}{1 - \sigma^{-2r}} \{ \sigma^{-2r} + 2^{-1} (1 + \sigma^{-2r}) (1 + \sigma^{-2r})^{s-1} \} \text{ (H, 165).}$$

$$19) \int \cos^{p-1} rx \cdot \sin^{s-1} rx \cdot \sin \left\{ \frac{1}{2} s \pi - (p+s)rx \right\} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{p+s-1} q} \sigma^{-2r} (1 + \sigma^{-2r})^{p-1} (1 - \sigma^{-2r})^{s-1} \text{ (H, 150).}$$

$$20) \int \cos^{p-1} rx \cdot \sin^{s-1} rx \cdot \cos \left\{ \frac{1}{2} s \pi - (p+s) rx \right\} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{p+s-1} q} e^{-2qr} (1 + e^{-2qr})^{p-1} \\ (1 - e^{-2qr})^{s-1} \quad (\text{H, 150}).$$

$$21) \int \cos^{p-2} rx \cdot \sin^{s-2} rx \cdot \sin \left\{ (s-1) \frac{1}{2} \pi - (p+s) rx \right\} \frac{dx}{q^2 + x^2} = \frac{-\pi}{2^{p+s-2}} e^{-2qr} (1 + e^{-2qr})^{p-2} \\ (1 - e^{-2qr})^{s-2} \quad (\text{H, 168}).$$

$$22) \int \cos^{p-2} rx \cdot \sin^{s-2} rx \cdot \cos \left\{ (s-1) \frac{1}{2} \pi - (p+s) rx \right\} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{p+s-2}} e^{-2qr} (1 + e^{-2qr})^{p-2} \\ (1 - e^{-2qr})^{s-2} \quad (\text{H, 168}).$$

$$1) \int \sin^s rx \cdot \sin^{s_1} r_1 x \dots \sin \left\{ (s+s_1+\dots) \frac{1}{2} \pi - (sr+s_1r_1+\dots)x \right\} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{1+s+s_1+\dots}} \\ \{1 - (1 - e^{-2qr})^s (1 - e^{-2qr_1})^{s_1} \dots\} \quad (\text{H, 49}).$$

$$2) \int \sin^s rx \cdot \sin^{s_1} r_1 x \dots \cos \left\{ (s+s_1+\dots) \frac{1}{2} \pi - (sr+s_1r_1+\dots)x \right\} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{1+s+s_1+\dots} q} \\ (1 - e^{-2qr})^s (1 - e^{-2qr_1})^{s_1} \dots \quad (\text{H, 49}).$$

$$3) \int \cos^s rx \cdot \cos^{s_1} r_1 x \dots \sin \left\{ (sr+s_1r_1+\dots)x \right\} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{1+s+s_1+\dots}} \{ (1 + e^{-2qr})^s \\ (1 + e^{-2qr_1})^{s_1} \dots - 1 \} \quad (\text{H, 44}).$$

$$4) \int \cos^s rx \cdot \cos^{s_1} r_1 x \dots \cos \left\{ (sr+s_1r_1+\dots)x \right\} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{1+s+s_1+\dots} q} (1 + e^{-2qr})^s \\ (1 + e^{-2qr_1})^{s_1} \dots \quad (\text{H, 44}).$$

$$5) \int \sin^s rx \cdot \sin^{s_1} r_1 x \dots \cos^t px \cdot \cos^{t_1} p_1 x \dots \sin \left\{ (s+s_1+\dots) \frac{1}{2} \pi - (pt+p_1t_1+\dots + sr+s_1r_1+\dots)x \right\} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{1+s+s_1+\dots+t+t_1+\dots}} \{1 - (1 + e^{-2mp})^t (1 + e^{-2mp_1})^{t_1} \dots \\ (1 - e^{-2mr})^s (1 - e^{-2mr_1})^{s_1} \dots\} \quad (\text{H, 54}).$$

$$6) \int \sin^s rx \cdot \sin^{s_1} r_1 x \dots \cos^t px \cdot \cos^{t_1} p_1 x \dots \cos \left\{ (s+s_1+\dots) \frac{1}{2} \pi - (pt+p_1t_1+\dots + sr+s_1r_1+\dots)x \right\} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{1+s+s_1+\dots+t+t_1+\dots} q} (1 + e^{-2mp})^t (1 + e^{-2mp_1})^{t_1} \dots \\ (1 - e^{-2mr})^s (1 - e^{-2mr_1})^{s_1} \dots \quad (\text{H, 54}).$$

- 7) $\int \sin^s rx \cdot \sin^{s_1} r_1 x \dots \cos^t px \cdot \cos^{t_1} p_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - ux \right\} \frac{x dx}{q^2 + x^2} =$
 $= \frac{-\pi}{2^{1+s+s_1+\dots+t+t_1+\dots} q} (e^{pq} + e^{-pq})^t (e^{p_1 q} + e^{-p_1 q})^{t_1} \dots (e^{qr} - e^{-qr})^s (e^{q r_1} - e^{-q r_1})^{s_1} \dots e^{-qu} \quad (\text{H, 78}).$
- 8) $\int \sin^s rx \cdot \sin^{s_1} r_1 x \dots \cos^t px \cdot \cos^{t_1} p_1 x \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - ux \right\} \frac{dx}{q^2 + x^2} =$
 $= \frac{\pi}{2^{1+s+s_1+\dots+t+t_1+\dots} q} (e^{pq} + e^{-pq})^t (e^{p_1 q} + e^{-p_1 q})^{t_1} \dots (e^{qr} - e^{-qr})^s (e^{q r_1} - e^{-q r_1})^{s_1} \dots e^{-qu}$
 (H, 78). Dans 7) et 8) on a $u > sr + s_1 r_1 + \dots + pt + p_1 t_1 + \dots$
- 9) $\int \cos^p rx \cdot \sin^s rx \cdot \sin \left\{ \frac{1}{2} s \pi - (p + s) rx \right\} \cdot \text{Tg } 2rx \frac{dx}{q^2 + x^2} = \frac{-\pi}{2^{p+s+1} q} \frac{1}{1 + e^{-4qr}}$
 $(1 + e^{-2qr})^{p+1} (1 - e^{-2qr})^{s+1} \quad (\text{H, 149}).$
- 10) $\int \cos^p rx \cdot \sin^s rx \cdot \cos \left\{ \frac{1}{2} s \pi - (p + s) rx \right\} \cdot \text{Tg } 2rx \frac{x dx}{q^2 + x^2} = \frac{-\pi}{2^{p+s+1}} \frac{1}{1 + e^{-4qr}}$
 $(1 + e^{-2qr})^{p+1} (1 - e^{-2qr})^{s+1} \quad (\text{H, 149}).$
- 11) $\int \cos^p rx \cdot \sin^s rx \cdot \sin \left\{ \frac{1}{2} s \pi - (p + s) rx \right\} \cdot \text{Cot } 2rx \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{p+s+1} q} (1 + e^{-4qr})$
 $(1 + e^{-2qr})^{p-1} (1 - e^{-2qr})^{s-1} \quad (\text{H, 150}).$
- 12) $\int \cos^p rx \cdot \sin^s rx \cdot \cos \left\{ \frac{1}{2} s \pi - (p + s) rx \right\} \cdot \text{Cot } 2rx \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{p+s+1}} (1 + e^{-4qr})$
 $(1 + e^{-2qr})^{p-1} (1 - e^{-2qr})^{s-1} \quad (\text{H, 149}).$
- 13) $\int \cos^{p-1} rx \cdot \sin^{s-1} rx \cdot \sin \left\{ (s-1) \frac{1}{2} \pi - (p + s) rx \right\} \cdot \text{Tg } 2rx \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{p+s-1} q} \frac{1}{e^{2qr} + e^{-2qr}}$
 $(1 + e^{-2qr})^p (1 - e^{-2qr})^s \quad (\text{H, 168}).$
- 14) $\int \cos^{p-1} rx \cdot \sin^{s-1} rx \cdot \cos \left\{ (s-1) \frac{1}{2} \pi - (p + s) rx \right\} \cdot \text{Tg } 2rx \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{p+s-1}} \frac{1}{e^{2qr} + e^{-2qr}}$
 $(1 + e^{-2qr})^p (1 - e^{-2qr})^s \quad (\text{H, 168}).$
- 15) $\int \cos^{p-1} rx \cdot \sin^{s-1} rx \cdot \sin \left\{ (s-1) \frac{1}{2} \pi - (p + s) rx \right\} \cdot \text{Cot } 2rx \frac{dx}{q^2 + x^2} = \frac{-\pi}{2^{p+s-1} q} (1 + e^{-4qr})$
 $(1 + e^{-2qr})^{p-2} (1 - e^{-2qr})^{s-2} e^{-2qr} \quad (\text{H, 168}).$
- 16) $\int \cos^{p-1} rx \cdot \sin^{s-1} rx \cdot \cos \left\{ (s-1) \frac{1}{2} \pi - (p + s) rx \right\} \cdot \text{Cot } 2rx \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{p+s-1}} (1 + e^{-4qr})$
 $(1 + e^{-2qr})^{p-2} (1 - e^{-2qr})^{s-2} e^{-2qr} \quad (\text{H, 168}).$

$$1) \int \sin px \cdot \sin rx \frac{dx}{q^2 - x^2} = -\frac{\pi}{2q} \cos pq \cdot \sin qr [p > r], = -\frac{\pi}{4q} \sin 2pq [p = r], = \\ = -\frac{\pi}{2q} \sin pq \cdot \cos qr [p < r] \text{ (VIII, 335).}$$

$$2) \int \sin px \cdot \cos rx \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} \cos pq \cdot \cos qr [p > r], = -\frac{\pi}{4} \cos 2pq [p = r], = \\ = \frac{\pi}{2} \sin pq \cdot \sin qr [p < r] \text{ (VIII, 335).}$$

$$3) \int \cos px \cdot \cos rx \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \sin pq \cdot \cos qr [p > r], = \frac{\pi}{4q} \sin 2pq [p = r], = \\ = \frac{\pi}{2q} \cos pq \cdot \sin qr [p < r] \text{ (VIII, 335).}$$

$$4) \int \sin 2srx \cdot \cot rx \frac{dx}{q^2 - x^2} = \frac{\pi}{q} \sin^2 sqr \cdot \cot qr \text{ (H, 127).}$$

$$5) \int \sin^2 srx \cdot \cot rx \frac{x dx}{q^2 - x^2} = \frac{\pi}{4} (1 - \sin 2sqr \cdot \cot qr) \text{ (H, 127).}$$

$$6) \int \sin 4srx \cdot \operatorname{Tg} rx \frac{dx}{q^2 - x^2} = \frac{\pi}{q} \sin^2 2sqr \cdot \operatorname{Tg} qr \text{ (H, 129).}$$

$$7) \int \sin^2 2srx \cdot \operatorname{Tg} rx \frac{x dx}{q^2 - x^2} = -\frac{\pi}{4} (1 + \sin 4sqr \cdot \operatorname{Tg} qr) \text{ (H, 130).}$$

$$8) \int \sin^s rx \cdot \sin \left(\frac{1}{2} s\pi - srx \right) \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \left\{ \sin^s qr \cdot \cos \left(\frac{1}{2} s\pi - sqr \right) - 2^{-s} \right\} \text{ (H, 106).}$$

$$9) \int \sin^s rx \cdot \cos \left(\frac{1}{2} s\pi - srx \right) \frac{dx}{q^2 - x^2} = -\frac{\pi}{2q} \sin^s qr \cdot \sin \left(\frac{1}{2} s\pi - sqr \right) \text{ (H, 106).}$$

$$10) \int \cos^a sx \cdot \sin asx \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \{ 2^{-a} - \cos^a qs \cdot \cos aqs \} \text{ (VIII, 506).}$$

$$11) \int \cos^a sx \cdot \cos asx \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \cos^a qs \cdot \sin aqs \text{ (VIII, 506).}$$

$$12) \int \cos^a sx \cdot \sin rx \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} \cos^a qs \cdot \cos qr [r > as], = -\frac{\pi}{2} \cos^a qs \cdot \cos qr + \frac{\pi}{2^{a+1}} \\ [r = as], = -\frac{\pi}{2} \cos^a qs \cdot \cos qr + \frac{\pi}{2^a} \sum_0^d \binom{a}{n} \cos \{ (as - 2ns - r)q \} \left[\frac{r}{s} < a, \text{ fract.} \right] = \\ = -\frac{\pi}{2} \cos^a qs \cdot \cos qr - \frac{\pi}{2^{a+1}} \binom{a}{d} + \frac{\pi}{2^a} \sum_0^d \binom{a}{n} \cos \{ (as - 2ns - r)q \} \left[\frac{r}{s} < a, \text{ entier} \right]; \\ \left[d = \mathcal{L} \frac{as - r}{2s} \right] \text{ (VIII, 507).}$$

$$13) \int \cos^a s x \cdot \cos r x \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \cos^a q s \cdot \sin q r [r \geq a s], = -\frac{\pi}{2q} \cos^a q s \cdot \sin q r + \frac{\pi}{2^a q} \sum_0^a \binom{a}{n} \sin \{(a s - 2 n s - r) q\} [r < a s] \text{ (VIII, 506)}.$$

$$14) \int \cos^a s x \cdot \sin a s x \cdot \sin p x \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \cos^a q s \cdot \cos p q \cdot \sin a q s [p \geq 2 a s], = -\frac{\pi}{2} \cos^a q s \cdot \sin p q \cdot \cos a q s - \frac{\pi}{2^{a+1}} \sum_0^a \binom{a}{n} \sin \{(p - 2 n s) q\} [p < 2 a s, d = \mathcal{E} \frac{p}{2 s}] \text{ (VIII, 506)}.$$

$$15) \int \cos^a s x \cdot \sin a s x \cdot \cos p x \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \cos^a q s \cdot \sin p q \cdot \sin a q s [p > 2 a s], = -\frac{\pi}{2^{a+1}} + \frac{\pi}{2} \cos^a q s \cdot \sin p q \cdot \sin a q s [p = 2 a s], = -\frac{\pi}{2} \cos^a q s \cdot \cos p q \cdot \cos a q s + \frac{\pi}{2^{a+1}} \sum_0^a \binom{a}{n} \cos \{(p - 2 n s) q\} \left[\frac{p}{2 s} < a, \text{ fract.} \right], = -\frac{\pi}{2} \cos^a q s \cdot \cos p q \cdot \cos a q s - \frac{\pi}{2^{a+1}} \binom{a}{d} + \frac{\pi}{2^{a+1}} \sum_0^a \binom{a}{n} \cos \{(p - 2 n s) q\} \left[\frac{p}{2 s} < a, \text{ entier} \right]; [d = \mathcal{E} \frac{p}{2 s}] \text{ (VIII, 506)}.$$

$$16) \int \cos^a s x \cdot \cos a s x \cdot \sin p x \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} \cos^a q s \cdot \cos p q \cdot \cos a q s [p > 2 a s], = \frac{\pi}{2^{a+1}} - \frac{\pi}{2} \cos^a q s \cdot \cos p q \cdot \cos a q s [p = 2 a s], = \frac{\pi}{2} \cos^a q s \cdot \sin p q \cdot \sin a q s - \frac{\pi}{2^{a+1}} \sum_0^a \binom{a}{n} \cos \{(p - 2 n s) q\} \left[\frac{p}{2 s} < a, \text{ fract.} \right] = \frac{\pi}{2} \cos^a q s \cdot \sin p q \cdot \sin a q s + \frac{\pi}{2^{a+1}} \binom{a}{d} - \frac{\pi}{2^{a+1}} \sum_0^a \binom{a}{n} \cos \{(p - 2 n s) q\} \left[\frac{p}{2 s} < a, \text{ entier} \right]; [d = \mathcal{E} \frac{p}{2 s}] \text{ (VIII, 505)}.$$

$$17) \int \cos^a s x \cdot \cos a s x \cdot \cos p x \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \cos^a q s \cdot \sin p q \cdot \cos a q s [p \geq 2 a s], = \frac{\pi}{2q} \cos^a q s \cdot \cos p q \cdot \sin a q s + \frac{\pi}{2^{a+1} q} \sum_0^a \binom{a}{n} \sin \{(p - 2 n s) q\} [p < 2 a s, d = \mathcal{E} \frac{p}{2 s}] \text{ (VIII, 505)}.$$

$$18) \int \cos^s r x \cdot \sin s r x \cdot \text{Tg } 2 r x \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \text{Tg } 2 q r \cdot (1 - \cos^s q r \cdot \cos s q r) \text{ (H, 146)}.$$

$$19) \int (1 - \cos^s r x \cdot \cos s r x) \text{Tg } 2 r x \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} (1 + \text{Tg } 2 q r \cdot \cos^s q r \cdot \sin s q r) \text{ (H, 146)}.$$

$$20) \int \cos^s r x \cdot \sin s r x \cdot \text{Cot } 2 r x \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \text{Cot } 2 q r \cdot (1 - \cos^s q r \cdot \cos s q r) \text{ (H, 146)}.$$

$$21) \int (1 - \cos^s rx \cdot \cos srx) \cot 2rx \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} (1 - \cot 2qr \cdot \cos^s qr \cdot \sin sqr) \quad (\text{H}, 146).$$

$$22) \int \cos^{p-1} rx \cdot \sin^{s-1} rx \cdot \sin \left\{ \frac{1}{2} s\pi - (p+s)rx \right\} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \cos^{p-1} qr \cdot \sin^{s-1} qr \cdot \cos \left\{ \frac{1}{2} s\pi - (p+s)qr \right\} \quad (\text{H}, 150).$$

$$23) \int \cos^{p-1} rx \cdot \sin^{s-1} rx \cdot \cos \left\{ \frac{1}{2} s\pi - (p+s)rx \right\} \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} \cos^{p-1} qr \cdot \sin^{s-1} qr \cdot \sin \left\{ \frac{1}{2} s\pi - (p+s)qr \right\} \quad (\text{H}, 150).$$

$$24) \int \cos^{s-1} rx \cdot \sin \{(s+1)rx\} \cdot \text{Tg } 2rx \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \text{Tg } 2qr \cdot [1 - \cos^{s-1} qr \cdot \cos \{(s+1)qr\}] \quad (\text{H}, 166).$$

$$25) \int \cos^{s-1} rx \cdot \cos \{(s+1)rx\} \cdot \text{Tg } 2rx \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} [1 + \text{Tg } 2qr \cdot \cos^{s-1} qr \cdot \sin \{(s+1)qr\}] \quad (\text{H}, 166).$$

$$26) \int \cos^{s-1} rx \cdot \sin \{(s+1)rx\} \cdot \cot 2rx \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \cot 2qr \cdot [1 - \cos^{s-1} qr \cdot \cos \{(s+1)qr\}] \quad (\text{H}, 166).$$

$$27) \int \cos^{s-1} rx \cdot \cos \{(s+1)rx\} \cdot \cot 2rx \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} [\cot 2qr \cdot \cos^{s-1} qr \cdot \sin \{(s+1)qr\} - 1] \quad (\text{H}, 166).$$

$$28) \int \cos^{p-2} rx \cdot \sin^{s-2} rx \cdot \sin \left\{ (s-1) \frac{1}{2} \pi - (p+s)rx \right\} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \cos^{p-2} qr \cdot \sin^{s-2} qr \cdot \cos \left\{ (s-1) \frac{1}{2} \pi - (p+s)qr \right\} \quad (\text{H}, 170).$$

$$29) \int \cos^{p-2} rx \cdot \sin^{s-2} rx \cdot \cos \left\{ (s-1) \frac{1}{2} \pi - (p+s)rx \right\} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \cos^{p-2} qr \cdot \sin^{s-2} qr \cdot \sin \left\{ (s-1) \frac{1}{2} \pi - (p+s)qr \right\} \quad (\text{H}, 170).$$

$$1) \int \sin^s rx \cdot \sin^{s_1} r_1 x \dots \sin \left\{ (s+s_1+\dots) \frac{1}{2} \pi - (sr+s_1r_1+\dots)x \right\} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \left\{ \sin^s qr \cdot \sin^{s_1} qr_1 \dots \cos \left\{ (s+s_1+\dots) \frac{1}{2} \pi - (sr+s_1r_1+\dots)q \right\} - 2^{-s-s_1-\dots} \right\} \quad (\text{H}, 106).$$

$$2) \int \sin^s r x \cdot \sin^{s_1} r_1 x \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (s r + s_1 r_1 + \dots) x \right\} \frac{dx}{q^2 - x^2} = \\ = -\frac{\pi}{2q} \sin^s q r \cdot \sin^{s_1} q r_1 \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (s r + s_1 r_1 + \dots) q \right\} \quad (\text{H, 106}).$$

$$3) \int \cos^s r x \cdot \cos^{s_1} r_1 x \dots \sin \left\{ (s r + s_1 r_1 + \dots) x \right\} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \left\{ 2^{-s-s_1-\dots} - \cos^s q r \cdot \cos^{s_1} q r_1 \dots \right. \\ \left. \dots \cos \left\{ (s r + s_1 r_1 + \dots) q \right\} \right\} \quad (\text{H, 104}).$$

$$4) \int \cos^s r x \cdot \cos^{s_1} r_1 x \dots \cos \left\{ (s r + s_1 r_1 + \dots) x \right\} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \cos^s q r \cdot \cos^{s_1} q r_1 \dots \\ \dots \sin \left\{ (s r + s_1 r_1 + \dots) q \right\} \quad (\text{H, 104}).$$

$$5) \int \sin^s r x \dots \cos^t p x \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (s r + \dots + t p + \dots) x \right\} \frac{x dx}{q^2 - x^2} = \\ = \frac{\pi}{2} \left\{ \sin^s q r \dots \cos^t p q \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (s r + \dots + t p + \dots) q \right\} - 2^{-s-t-\dots} \right\} \quad (\text{H, 108}).$$

$$6) \int \sin^s r x \dots \cos^t p x \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (s r + \dots + t p + \dots) x \right\} \frac{dx}{q^2 - x^2} = \\ = -\frac{\pi}{2q} \sin^s q r \dots \cos^t p q \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (s r + \dots + t p + \dots) q \right\} \quad (\text{H, 108}).$$

$$7) \int \sin^s r x \dots \cos^t p x \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - u x \right\} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \sin^s q r \dots \cos^t p q \dots \\ \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - q u \right\} [u > s r + \dots + t p + \dots] \quad (\text{H, 121}).$$

$$8) \int \sin^s r x \dots \cos^t p x \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - u x \right\} \frac{dx}{q^2 - x^2} = -\frac{\pi}{2q} \sin^s q r \dots \cos^t p q \dots \\ \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - q u \right\} [u > s r + \dots + t p + \dots] \quad (\text{H, 121}).$$

$$9) \int \cos^p r x \cdot \sin^s r x \cdot \sin \left\{ \frac{1}{2} s \pi - (p + s) r x \right\} \cdot \text{Tg } 2 r x \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \cos^p q r \cdot \sin^s q r \cdot \text{Tg } 2 q r \\ \cos \left\{ \frac{1}{2} s \pi - (p + s) q r \right\} \quad (\text{H, 150}).$$

$$10) \int \cos^p r x \cdot \sin^s r x \cdot \cos \left\{ \frac{1}{2} s \pi - (p + s) r x \right\} \cdot \text{Tg } 2 r x \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} \cos^p q r \cdot \sin^s q r \cdot \text{Tg } 2 q r \cdot \\ \sin \left\{ \frac{1}{2} s \pi - (p + s) q r \right\} \quad (\text{H, 150}).$$

F. Alg. rat. fract. à dén. $q^2 - x^2$; TABLE 167, suite.
Circ. Dir. en num. à plus. fact.

Lim. 0 et ∞ .

$$11) \int \cos^p rx \cdot \sin^s rx \cdot \sin \left\{ \frac{1}{2} s \pi - (p+s) rx \right\} \cdot \cot 2 rx \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \cos^p qr \cdot \sin^s qr \cdot \cot 2 qr.$$

$$\cos \left\{ \frac{1}{2} s \pi - (p+s) qr \right\} \quad (\text{H, 150}).$$

$$12) \int \cos^p rx \cdot \sin^s rx \cdot \cos \left\{ \frac{1}{2} s \pi - (p+s) rx \right\} \cdot \cot 2 rx \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} \cos^p qr \cdot \sin^s qr \cdot \cot 2 qr.$$

$$\sin \left\{ \frac{1}{2} s \pi - (p+s) qr \right\} \quad (\text{H, 150}).$$

$$13) \int \cos^{p-1} rx \cdot \sin^{s-1} rx \cdot \sin \left\{ (s-1) \frac{1}{2} \pi - (p+s) rx \right\} \cdot \text{Tg } 2 rx \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \cos^{p-1} qr.$$

$$\sin^{s-1} qr \cdot \text{Tg } 2 qr \cdot \cos \left\{ (s-1) \frac{1}{2} \pi - (p+s) qr \right\} \quad (\text{H, 170}).$$

$$14) \int \cos^{p-1} rx \cdot \sin^{s-1} rx \cdot \cos \left\{ (s-1) \frac{1}{2} \pi - (p+s) rx \right\} \cdot \text{Tg } 2 rx \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \cos^{p-1} qr.$$

$$\sin^{s-1} qr \cdot \text{Tg } 2 qr \cdot \sin \left\{ (s-1) \frac{1}{2} \pi - (p+s) qr \right\} \quad (\text{H, 170}).$$

$$15) \int \cos^{p-1} rx \cdot \sin^{s-1} rx \cdot \sin \left\{ (s-1) \frac{1}{2} \pi - (p+s) rx \right\} \cdot \cot 2 rx \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \cos^{p-1} qr.$$

$$\sin^{s-1} qr \cdot \cot 2 qr \cdot \cos \left\{ (s-1) \frac{1}{2} \pi - (p+s) qr \right\} \quad (\text{H, 170}).$$

$$16) \int \cos^{p-1} rx \cdot \sin^{s-1} rx \cdot \cos \left\{ (s-1) \frac{1}{2} \pi - (p+s) rx \right\} \cdot \cot 2 rx \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \cos^{p-1} qr.$$

$$\sin^{s-1} qr \cdot \cot 2 qr \cdot \sin \left\{ (s-1) \frac{1}{2} \pi - (p+s) qr \right\} \quad (\text{H, 170}).$$

F. Alg. rat. fract. à dén. $q^4 + x^4$; TABLE 168.
Circ. Dir. en num. à plus. fact.

Lim. 0 et ∞ .

$$1) \int \sin 4 s rx \cdot \text{Tg } rx \frac{dx}{4q^4 + x^4} = -\frac{\pi}{8q^3} \frac{1 - 2e^{-2qr} \sin 2qr - e^{-4qr} + 2e^{-(2s+1)2qr} \sin 2qr}{1 +}$$

$$\frac{(\cos 4sqr - \sin 4sqr) - e^{-4sqr}(1 - e^{-4qr})(\cos 4sqr + \sin 4sqr)}{+ 2e^{-2qr} \cos 2qr + e^{-4qr}} \quad (\text{H, 88}).$$

$$2) \int \sin 4 s rx \cdot \text{Tg } rx \frac{x^3 dx}{4q^4 + x^4} = -\frac{\pi}{4q} \frac{1 + 2e^{-2qr} \sin 2qr - e^{-4qr} - 2e^{-(2s+1)2qr} \sin 2qr}{1 +}$$

$$\frac{(\cos 4sqr + \sin 4sqr) - e^{-4sqr}(1 - e^{-4qr})(\cos 4sqr - \sin 4sqr)}{+ 2e^{-2qr} \cos 2qr - e^{-4qr}} \quad (\text{H, 88}).$$

$$3) \int \sin^2 srx \cdot Tgrx \frac{x dx}{4q^4 + x^4} = \frac{\pi}{8q^2} \frac{2e^{-sqr} \sin 2qr - 2e^{-(s+1)qr} \sin 2qr \cdot \cos 4sqr +}{1 +} \\ + \frac{e^{-1sqr} (1 - e^{-1qr}) \sin 4sqr}{+ 2e^{-sqr} \cos 2qr + e^{-1qr}} \quad (\text{H, 88}).$$

$$4) \int \sin^2 srx \cdot Tgrx \frac{x^3 dx}{4q^4 + x^4} = \frac{\pi}{4} \frac{2e^{-sqr} \cos 2qr + 2e^{-1qr} + 2e^{-(s+1)qr} \sin 2qr \cdot}{1 +} \\ \frac{\sin 4sqr + e^{-1sqr} (1 - e^{-1qr}) \cos 4sqr}{+ 2e^{-sqr} \cos 2qr + e^{-1qr}} \quad (\text{H, 89}).$$

$$5) \int \sin^2 srx \cdot Cotrx \frac{dx}{4q^4 + x^4} = \frac{\pi}{8q^2} \frac{1 + 2e^{-sqr} \sin 2qr - e^{-1qr} - e^{-sqr} (1 - e^{-1qr})}{1 -} \\ \frac{(\cos 2sqr + \sin 2sqr) - 2e^{-(s+1)qr} \sin 2qr \cdot (\cos 2sqr - \sin 2sqr)}{- 2e^{-sqr} \cos 2qr + e^{-1qr}} \quad (\text{H, 85}).$$

$$6) \int \sin^2 srx \cdot Cotrx \frac{x^2 dx}{4q^4 + x^4} = \frac{\pi}{4q} \frac{1 - 2e^{-sqr} \sin 2qr - e^{-1qr} - e^{-sqr} (1 - e^{-1qr})}{1 -} \\ \frac{(\cos 2sqr - \sin 2sqr) + 2e^{-(s+1)qr} \sin 2qr \cdot (\cos 2sqr + \sin 2sqr)}{- 2e^{-sqr} \cos 2qr + e^{-1qr}} \quad (\text{H, 85}).$$

$$7) \int \sin^2 srx \cdot Cotrx \frac{x dx}{4q^4 + x^4} = \frac{\pi}{8q^2} \frac{2e^{-sqr} \sin 2qr - e^{-sqr} (1 - e^{-1qr}) \sin 2sqr -}{1 -} \\ - \frac{2e^{-(s+1)qr} \cos 2sqr \cdot \sin 2qr}{- 2e^{-sqr} \cos 2qr + e^{-1qr}} \quad (\text{H, 85}).$$

$$8) \int \sin^2 srx \cdot Cotrx \frac{x^3 dx}{4q^4 + x^4} = \frac{\pi}{4} \frac{2e^{-sqr} \cos 2qr - 2e^{-1qr} - e^{-sqr} (1 - e^{-1qr})}{1 -} \\ \frac{\cos 2sqr + 2e^{-(s+1)qr} \sin 2sqr \cdot \sin 2qr}{- 2e^{-sqr} \cos 2qr + e^{-1qr}} \quad (\text{H, 85}).$$

$$9) \int \sin^s rx \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (sr + \dots) x \right\} \frac{x dx}{4q^4 + x^4} = \frac{\pi}{2^{s+s+\dots} q^2} (1 - 2e^{-sqr} \cos 2qr + \\ + e^{-1qr})^{\frac{s}{2}} \dots \sin \left\{ s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{sqr} - \cos 2qr} \right) + \dots \right\} \quad (\text{H, 51}).$$

$$10) \int \sin^s rx \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (sr + \dots) x \right\} \frac{x^3 dx}{4q^4 + x^4} = \frac{\pi}{2^{s+s+\dots}} \left\{ 1 - (1 - 2e^{-sqr} \cos 2qr + \right. \\ \left. + e^{-1qr})^{\frac{s}{2}} \dots \cos \left\{ s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{sqr} - \cos 2qr} \right) + \dots \right\} \right\} \quad (\text{H, 52}).$$

$$11) \int \sin^s rx \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (sr + \dots) x \right\} \frac{dx}{4q^4 + x^4} = \frac{\pi}{2^{s+s+\dots} q^2} (1 - 2e^{-sqr} \cos 2qr + \\ + e^{-1qr})^{\frac{s}{2}} \dots \left\{ \cos \left\{ s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{sqr} - \cos 2qr} \right) + \dots \right\} - \sin \left\{ s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{sqr} - \cos 2qr} \right) + \dots \right\} \right\} \\ (\text{H, 51}).$$

$$12) \int \sin^s r x \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (sr + \dots) x \right\} \frac{x^3 dx}{4q^4 + x^4} = \frac{\pi}{2^{2+s+\dots} q} (1 - 2e^{-2qr} \cos 2qr + e^{-4qr})^{\frac{1}{2}} \dots \left\{ \cos \left\{ s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} - \cos 2qr} \right) + \dots \right\} + \sin \left\{ s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} - \cos 2qr} \right) + \dots \right\} \right\} \quad (\text{H, 51}).$$

$$13) \int \cos^s r x \dots \sin \{ (sr + \dots) x \} \frac{x dx}{4q^4 + x^4} = \frac{\pi}{2^{2+s+\dots} q^2} (1 + 2e^{-2qr} \cos 2qr + e^{-4qr})^{\frac{1}{2}} \dots \sin \left\{ s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} + \cos 2qr} \right) + \dots \right\} \quad (\text{H, 46}).$$

$$14) \int \cos^s r x \dots \sin \{ (sr + \dots) x \} \frac{x^3 dx}{4q^4 + x^4} = \frac{\pi}{2^{2+s+\dots}} (1 + 2e^{-2qr} \cos 2qr + e^{-4qr})^{\frac{1}{2}} \dots \cos \left\{ s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} + \cos 2qr} \right) + \dots \right\} \quad (\text{H, 46}).$$

$$15) \int \cos^s r x \dots \cos \{ (sr + \dots) x \} \frac{dx}{4q^4 + x^4} = \frac{\pi}{2^{2+s+\dots} q^3} (1 + 2e^{-2qr} \cos 2qr + e^{-4qr})^{\frac{1}{2}} \dots \left\{ \cos \left\{ s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} + \cos 2qr} \right) + \dots \right\} + \sin \left\{ s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} + \cos 2qr} \right) + \dots \right\} \right\} \quad (\text{H, 46}).$$

$$16) \int \cos^s r x \dots \cos \{ (sr + \dots) x \} \frac{x^3 dx}{4q^4 + x^4} = \frac{\pi}{2^{2+s+\dots} q} (1 + 2e^{-2qr} \cos 2qr + e^{-4qr})^{\frac{1}{2}} \dots \left\{ \cos \left\{ s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} + \cos 2qr} \right) + \dots \right\} - \sin \left\{ s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} + \cos 2qr} \right) + \dots \right\} \right\} \quad (\text{H, 46}).$$

$$17) \int \sin^s r x \dots \cos^t p x \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (sr + \dots + tp + \dots) x \right\} \frac{x dx}{4q^4 + x^4} = \frac{-\pi}{2^{2+s+\dots+t+\dots} q^2} (1 + 2e^{-2pq} \cos 2pq + e^{-4pq})^{\frac{1}{2}} \dots (1 - 2e^{-2qr} \cos 2qr + e^{-4qr})^{\frac{1}{2}} \dots \sin \left\{ t \operatorname{Arctg} \left(\frac{\sin 2pq}{e^{2pq} + \cos 2pq} \right) + \dots - s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} - \cos 2qr} \right) - \dots \right\} \quad (\text{H, 56}).$$

$$18) \int \sin^s r x \dots \cos^t p x \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (sr + \dots + tp + \dots) x \right\} \frac{x^3 dx}{4q^4 + x^4} = \frac{\pi}{2^{2+s+\dots+t+\dots}} \left\{ 1 - (1 + 2e^{-2pq} \cos 2pq + e^{-4pq})^{\frac{1}{2}} \dots (1 - 2e^{-2qr} \cos 2qr + e^{-4qr})^{\frac{1}{2}} \dots \cos \left\{ t \operatorname{Arctg} \left(\frac{\sin 2pq}{e^{2pq} + \cos 2pq} \right) + \dots - s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} - \cos 2qr} \right) - \dots \right\} \right\} \quad (\text{H, 56}).$$

$$19) \int \sin^s r x \dots \cos^t p x \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (sr + \dots + tp + \dots) x \right\} \frac{dx}{4q^4 + x^4} = \frac{\pi}{2^{2+s+\dots+t+\dots} q^3} (1 + 2e^{-2pq} \cos 2pq + e^{-4pq})^{\frac{1}{2}} \dots (1 - 2e^{-2qr} \cos 2qr + e^{-4qr})^{\frac{1}{2}} \dots$$

$$\left\{ \cos \left\{ t \operatorname{Arctg} \left(\frac{\sin 2pq}{e^{2pq} + \cos 2pq} \right) + \dots - s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} - \cos 2qr} \right) - \dots \right\} + \right. \\ \left. + \sin \left\{ t \operatorname{Arctg} \left(\frac{\sin 2pq}{e^{2pq} + \cos 2pq} \right) + \dots - s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} - \cos 2qr} \right) - \dots \right\} \right\} \quad (\text{H, 55}).$$

$$20) \int \sin^r x \dots \cos^s p x \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (sr + \dots + tp + \dots) x \right\} \frac{x^3 dx}{4q^4 + x^4} = \frac{\pi}{2^{2+s+\dots+t+\dots} q} \\ (1 + 2e^{-2pq} \cos 2pq + e^{-4pq})^{\frac{1}{2}} \dots (1 - 2e^{-2qr} \cos 2qr + e^{-4qr})^{\frac{1}{2}} \dots \\ \left\{ \cos \left\{ t \operatorname{Arctg} \left(\frac{\sin 2pq}{e^{2pq} + \cos 2pq} \right) + \dots - s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} - \cos 2qr} \right) - \dots \right\} - \right. \\ \left. - \sin \left\{ t \operatorname{Arctg} \left(\frac{\sin 2pq}{e^{2pq} + \cos 2pq} \right) + \dots - s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} - \cos 2qr} \right) - \dots \right\} \right\} \quad (\text{H, 56}).$$

$$21) \int \sin^r x \dots \cos^s p x \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - ux \right\} \frac{x dx}{4q^4 + x^4} = \frac{-\pi}{2^{2+s+\dots+t+\dots} q^3} (e^{2pq} + \\ + 2 \cos 2pq + e^{-2pq})^{\frac{1}{2}} \dots (e^{2qr} - 2 \cos 2qr + e^{-2qr})^{\frac{1}{2}} \dots e^{-qu} \\ \sin \left\{ t \operatorname{Arctg} \left(\frac{\sin 2pq}{e^{2pq} + \cos 2pq} \right) + \dots - s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} - \cos 2qr} \right) - \dots + \right. \\ \left. + (sr + \dots + pt + \dots - u) q \right\} \quad (\text{H, 81*}).$$

$$22) \int \sin^r x \dots \cos^s p x \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - ux \right\} \frac{x^3 dx}{4q^4 + x^4} = \frac{-\pi}{2^{2+s+\dots+t+\dots} q^3} (e^{2pq} + \\ + 2 \cos 2pq + e^{-2pq})^{\frac{1}{2}} \dots (e^{2qr} - 2 \cos 2qr + e^{-2qr})^{\frac{1}{2}} \dots e^{-qu} \\ \cos \left\{ t \operatorname{Arctg} \left(\frac{\sin 2pq}{e^{2pq} + \cos 2pq} \right) + \dots - s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} - \cos 2qr} \right) - \dots + \right. \\ \left. + (sr + \dots + pt + \dots - u) q \right\} \quad (\text{H, 81*}).$$

$$23) \int \sin^r x \dots \cos^s p x \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - ux \right\} \frac{dx}{4q^4 + x^4} = \frac{\pi}{2^{2+s+\dots+t+\dots} q^3} (e^{2pq} + \\ + 2 \cos 2pq + e^{-2pq})^{\frac{1}{2}} \dots (e^{2qr} - 2 \cos 2qr + e^{-2qr})^{\frac{1}{2}} \dots e^{-qu} \\ \left\{ \cos \left\{ t \operatorname{Arctg} \left(\frac{\sin 2pq}{e^{2pq} + \cos 2pq} \right) + \dots - s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} - \cos 2qr} \right) - \dots + \right. \right. \\ \left. + (sr + \dots + tp + \dots - u) q \right\} + \sin \left\{ t \operatorname{Arctg} \left(\frac{\sin 2pq}{e^{2pq} + \cos 2pq} \right) + \dots - \right. \\ \left. - s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} - \cos 2qr} \right) - \dots + (sr + \dots + tp + \dots - u) q \right\} \right\} \quad (\text{H, 81*}).$$

$$24) \int \sin^s r x \dots \cos^t p x \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - u x \right\} \frac{x^2 dx}{q^4 + x^4} = \frac{\pi}{2^{s+t+\dots+1+\dots} q} (e^{2 p q} + \\ + 2 \cos 2 p q + e^{-2 p q})^{\frac{1}{2}} \dots (e^{2 q r} - 2 \cos 2 q r + e^{-2 q r})^{\frac{1}{2}} \dots e^{-q u} \\ \left\{ \cos \left\{ t \operatorname{Arctg} \left(\frac{\sin 2 p q}{e^{2 p q} + \cos 2 p q} \right) + \dots - s \operatorname{Arctg} \left(\frac{\sin 2 q r}{e^{2 q r} - \cos 2 q r} \right) - \dots + \right. \right. \\ \left. \left. + (s r + \dots + t p + \dots - u) q \right\} - \sin \left\{ t \operatorname{Arctg} \left(\frac{\sin 2 p q}{e^{2 p q} + \cos 2 p q} \right) + \dots - \right. \right. \\ \left. \left. - s \operatorname{Arctg} \left(\frac{\sin 2 q r}{e^{2 q r} - \cos 2 q r} \right) - \dots + (s r + \dots + t p + \dots - u) q \right\} \right\} \quad (\text{H, 81*}).$$

Dans 21) à 24) on a $u > s r + \dots + t p + \dots$

$$25) \int \{ \cos(p^2 x^2) - \sin(p^2 x^2) \} \frac{dx}{q^4 + x^4} = \frac{\pi}{2 q^2 \sqrt{2}} e^{-p^2 q^2} \quad (\text{IV, 291}).$$

$$1) \int \sin 4 s r x \cdot \operatorname{Tgr} x \frac{dx}{q^4 - x^4} = \frac{\pi}{4 q^2} \left\{ 2 \sin^2 2 s q r \cdot \operatorname{Tg} q r - (1 - e^{-2 s q r}) \frac{1 - e^{-2 q r}}{1 + e^{-2 q r}} \right\} \quad (\text{H, 130}).$$

$$2) \int \sin 4 s r x \cdot \operatorname{Tgr} x \frac{x^2 dx}{q^4 - x^4} = \frac{\pi}{4 q} \left\{ 2 \sin^2 2 s q r \cdot \operatorname{Tg} q r + (1 - e^{-2 s q r}) \frac{1 - e^{-2 q r}}{1 + e^{-2 q r}} \right\} \quad (\text{H, 130}).$$

$$3) \int \sin^2 2 s r x \cdot \operatorname{Tgr} x \frac{x dx}{q^4 - x^4} = \frac{-\pi}{8 q^2} \left\{ \sin 4 s q r \cdot \operatorname{Tg} q r + (1 - e^{-2 s q r}) \frac{1 - e^{-2 q r}}{1 + e^{-2 q r}} \right\} \quad (\text{H, 130}).$$

$$4) \int \sin^2 2 s r x \cdot \operatorname{Tgr} x \frac{x^3 dx}{q^4 - x^4} = \frac{\pi}{8} \left\{ (1 - e^{-2 s q r}) \frac{1 - e^{-2 q r}}{1 + e^{-2 q r}} - 2 - \sin 4 s q r \cdot \operatorname{Tg} q r \right\} \quad (\text{H, 131}).$$

$$5) \int \sin 2 s r x \cdot \operatorname{Cotr} x \frac{dx}{q^4 - x^4} = \frac{\pi}{4 q^2} \left\{ 2 \sin^2 s q r \cdot \operatorname{Cot} q r + (1 - e^{-2 s q r}) \frac{1 + e^{-2 q r}}{1 - e^{-2 q r}} \right\} \quad (\text{H, 127}).$$

$$6) \int \sin 2 s r x \cdot \operatorname{Cotr} x \frac{x^2 dx}{q^4 - x^4} = \frac{\pi}{4 q} \left\{ 2 \sin^2 s q r \cdot \operatorname{Cot} q r - (1 - e^{-2 s q r}) \frac{1 + e^{-2 q r}}{1 - e^{-2 q r}} \right\} \quad (\text{H, 127}).$$

$$7) \int \sin^2 s r x \cdot \operatorname{Cotr} x \frac{x dx}{q^4 - x^4} = \frac{\pi}{8 q^2} \left\{ (1 - e^{-2 s q r}) \frac{1 + e^{-2 q r}}{1 - e^{-2 q r}} - \sin 2 s q r \cdot \operatorname{Cot} q r \right\} \quad (\text{H, 128}).$$

$$8) \int \sin^2 s r x \cdot \operatorname{Cotr} x \frac{x^3 dx}{q^4 - x^4} = \frac{\pi}{8} \left\{ 2 - \sin 2 s q r \cdot \operatorname{Cot} q r - (1 - e^{-2 s q r}) \frac{1 + e^{-2 q r}}{1 - e^{-2 q r}} \right\} \quad (\text{H, 128}).$$

$$9) \int \sin^s r x . \sin^{s_1} r_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) x \right\} \frac{x dx}{q^4 - x^4} = \frac{\pi}{4 q^3} \\ \left\{ \sin^s q r . \sin^{s_1} q r_1 \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) q \right\} - 2^{-s-s_1-\dots} \right. \\ \left. (1 - e^{-2 q r})^s (1 - e^{-2 q r_1})^{s_1} \dots \right\} \quad (\text{H, 107}).$$

$$10) \int \sin^s r x . \sin^{s_1} r_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) x \right\} \frac{x^3 dx}{q^4 - x^4} = \frac{\pi}{4} \\ \left\{ 2^{-s-s_1-\dots} \left\{ (1 - e^{-2 q r})^s (1 - e^{-2 q r_1})^{s_1} \dots - 2 \right\} + \sin^s q r . \sin^{s_1} q r_1 \dots \right. \\ \left. \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) q \right\} \right\} \quad (\text{H, 107}).$$

$$11) \int \sin^s r x . \sin^{s_1} r_1 x \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) x \right\} \frac{dx}{q^4 - x^4} = \frac{\pi}{4 q^3} \\ \left\{ 2^{-s-s_1-\dots} (1 - e^{-2 q r})^s (1 - e^{-2 q r_1})^{s_1} \dots - \sin^s q r . \sin^{s_1} q r_1 \dots \right. \\ \left. \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) q \right\} \right\} \quad (\text{H, 107}).$$

$$12) \int \sin^s r x . \sin^{s_1} r_1 x \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) x \right\} \frac{x^3 dx}{q^4 - x^4} = \frac{-\pi}{4 q} \\ \left\{ 2^{-s-s_1-\dots} (1 - e^{-2 q r})^s (1 - e^{-2 q r_1})^{s_1} \dots + \sin^s q r . \sin^{s_1} q r_1 \dots \right. \\ \left. \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) q \right\} \right\} \quad (\text{H, 107}).$$

$$13) \int \cos^s r x . \cos^{s_1} r_1 x \dots \sin \left\{ (sr + s_1 r_1 + \dots) x \right\} \frac{x dx}{q^4 - x^4} = \frac{\pi}{4 q^3} \left\{ 2^{-s-s_1-\dots} (1 + e^{-2 q r})^s \right. \\ \left. (1 + e^{-2 q r_1})^{s_1} \dots - \cos^s q r . \cos^{s_1} q r_1 \dots \cos \left\{ (sr + s_1 r_1 + \dots) q \right\} \right\} \quad (\text{H, 105}).$$

$$14) \int \cos^s r x . \cos^{s_1} r_1 x \dots \sin \left\{ (sr + s_1 r_1 + \dots) x \right\} \frac{x^3 dx}{q^4 - x^4} = \frac{\pi}{4} \left\{ 2^{-s-s_1-\dots} \left\{ 2 - (1 + e^{-2 q r})^s \right. \right. \\ \left. \left. (1 + e^{-2 q r_1})^{s_1} \dots \right\} - \cos^s q r . \cos^{s_1} q r_1 \dots \cos \left\{ (sr + s_1 r_1 + \dots) q \right\} \right\} \quad (\text{H, 105}).$$

$$15) \int \cos^s r x . \cos^{s_1} r_1 x \dots \cos \left\{ (sr + s_1 r_1 + \dots) x \right\} \frac{dx}{q^4 - x^4} = \frac{\pi}{4 q^3} \left\{ 2^{-s-s_1-\dots} (1 + e^{-2 q r})^s \right. \\ \left. (1 + e^{-2 q r_1})^{s_1} \dots + \cos^s q r . \cos^{s_1} q r_1 \dots \sin \left\{ (sr + s_1 r_1 + \dots) q \right\} \right\} \quad (\text{H, 104}).$$

$$16) \int \cos^s r x . \cos^{s_1} r_1 x \dots \cos \left\{ (sr + s_1 r_1 + \dots) x \right\} \frac{x^3 dx}{q^4 - x^4} = \frac{\pi}{4 q} \left\{ \cos^s q r . \cos^{s_1} q r_1 \dots \right. \\ \left. \dots \sin \left\{ (sr + s_1 r_1 + \dots) q \right\} - 2^{-s-s_1-\dots} (1 + e^{-2 q r})^s (1 + e^{-2 q r_1})^{s_1} \dots \right\} \quad (\text{H, 104}).$$

$$17) \int \sin^s r x . \sin^{s_1} r_1 x \dots \cos^t p x . \cos^{t_1} p_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots + tp + t_1 p_1 + \dots) x \right\} \frac{x dx}{q^k - x^k} = \frac{\pi}{4q^2} \left\{ \sin^s q r . \sin^{s_1} q r_1 \dots \cos^t p q . \cos^{t_1} p_1 q \dots \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots + tp + t_1 p_1 + \dots) q \right\} - 2^{-s-s_1-\dots-t-t_1-\dots} (1 + e^{-2pq})^t (1 + e^{-2p_1 q})^{t_1} \dots (1 - e^{-2qr})^s (1 - e^{-2q r_1})^{s_1} \dots \right\} \quad (\text{H, 109}).$$

$$18) \int \sin^s r x . \sin^{s_1} r_1 x \dots \cos^t p x . \cos^{t_1} p_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots + tp + t_1 p_1 + \dots) x \right\} \frac{x^3 dx}{q^k - x^k} = \frac{\pi}{4} \left\{ 2^{-s-s_1-\dots-t-t_1-\dots} (1 + e^{-2pq})^t (1 + e^{-2p_1 q})^{t_1} \dots \dots (1 - e^{-2qr})^s (1 - e^{-2q r_1})^{s_1} \dots + \sin^s q r . \sin^{s_1} q r_1 \dots \cos^t p q . \cos^{t_1} p_1 q \dots \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots + tp + t_1 p_1 + \dots) q \right\} \right\} \quad (\text{H, 109}).$$

$$19) \int \sin^s r x . \sin^{s_1} r_1 x \dots \cos^t p x . \cos^{t_1} p_1 x \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots + tp + t_1 p_1 + \dots) x \right\} \frac{dx}{q^k - x^k} = \frac{\pi}{4q^3} \left\{ 2^{-s-s_1-\dots-t-t_1-\dots} (1 + e^{-2pq})^t (1 + e^{-2p_1 q})^{t_1} \dots \dots (1 - e^{-2qr})^s (1 - e^{-2q r_1})^{s_1} \dots - \sin^s q r . \sin^{s_1} q r_1 \dots \cos^t p q . \cos^{t_1} p_1 q \dots \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots + tp + t_1 p_1 + \dots) q \right\} \right\} \quad (\text{H, 108}).$$

$$20) \int \sin^s r x . \sin^{s_1} r_1 x \dots \cos^t p x . \cos^{t_1} p_1 x \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots + tp + t_1 p_1 + \dots) x \right\} \frac{x^3 dx}{q^k - x^k} = \frac{-\pi}{4q} \left\{ 2^{-s-s_1-\dots-t-t_1-\dots} (1 + e^{-2pq})^t (1 + e^{-2p_1 q})^{t_1} \dots \dots (1 - e^{-2qr})^s (1 - e^{-2q r_1})^{s_1} \dots + \sin^s q r . \sin^{s_1} q r_1 \dots \cos^t p q . \cos^{t_1} p_1 q \dots \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots + tp + t_1 p_1 + \dots) q \right\} \right\} \quad (\text{H, 109}).$$

$$21) \int \sin^s r x . \sin^{s_1} r_1 x \dots \cos^t p x . \cos^{t_1} p_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - ux \right\} \frac{x dx}{q^k - x^k} = \frac{\pi}{4q^2} \left\{ \sin^s q r . \sin^{s_1} q r_1 \dots \cos^t p q . \cos^{t_1} p_1 q \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - qu \right\} - 2^{-s-s_1-\dots-t-t_1-\dots} (e^{pq} + e^{-pq})^t (e^{p_1 q} + e^{-p_1 q})^{t_1} \dots (e^{qr} - e^{-qr})^s (e^{q r_1} - e^{-q r_1})^{s_1} \dots e^{-qu} \right\} \quad (\text{H, 123*}).$$

$$\begin{aligned} 22) \int \sin^s r x \cdot \sin^{s_1} r_1 x \dots \cos^t p x \cdot \cos^{t_1} p_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - u x \right\} \frac{x^2 dx}{q^1 - x^1} = \\ = \frac{\pi}{q} \left\{ 2^{-s-s_1-\dots-t-t_1-\dots} (e^{pq} + e^{-pq})^t (e^{p_1 q} + e^{-p_1 q})^{t_1} \dots (e^{qr} - e^{-qr})^s (e^{q r_1} - e^{-q r_1})^{s_1} \dots e^{-qu} + \right. \\ \left. + \sin^s q r \cdot \sin^{s_1} q r_1 \dots \cos^t p q \cdot \cos^{t_1} p_1 q \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - q u \right\} \right\} \quad (\text{H, 123*}). \end{aligned}$$

$$\begin{aligned} 23) \int \sin^s r x \cdot \sin^{s_1} r_1 x \dots \cos^t p x \cdot \cos^{t_1} p_1 x \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - u x \right\} \frac{dx}{q^1 - x^1} = \\ = \frac{\pi}{4q^2} \left\{ 2^{-s-s_1-\dots-t-t_1-\dots} (e^{pq} + e^{-pq})^t (e^{p_1 q} + e^{-p_1 q})^{t_1} \dots (e^{qr} - e^{-qr})^s (e^{q r_1} - e^{-q r_1})^{s_1} \dots \right. \\ \left. e^{-qu} - \sin^s q r \cdot \sin^{s_1} q r_1 \dots \cos^t p q \cdot \cos^{t_1} p_1 q \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - q u \right\} \right\} \quad (\text{H, 123*}). \end{aligned}$$

$$\begin{aligned} 24) \int \sin^s r x \cdot \sin^{s_1} r_1 x \dots \cos^t p x \cdot \cos^{t_1} p_1 x \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - u x \right\} \frac{x^2 dx}{q^1 - x^1} = \\ = \frac{-\pi}{4q} \left\{ \sin^s q r \cdot \sin^{s_1} q r_1 \dots \cos^t p q \cdot \cos^{t_1} p_1 q \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - q u \right\} + 2^{-s-s_1-\dots-t-t_1-\dots} \right. \\ \left. (e^{pq} + e^{-pq})^t (e^{p_1 q} + e^{-p_1 q})^{t_1} \dots (e^{qr} - e^{-qr})^s (e^{q r_1} - e^{-q r_1})^{s_1} \dots e^{-qu} \right\} \quad (\text{H, 123*}). \end{aligned}$$

Dans 21) à 24) on a $u > sr + s_1 r_1 + \dots + tp + t_1 p_1 + \dots$

$$1) \int \sin p x \frac{p^2 (q + x)^2 + r(r+1)}{(q + x)^{r+2}} dx = \frac{p}{q^r} \quad (\text{IV, 289}).$$

$$2) \int \cos p x \frac{p^2 (q + x)^2 + r(r+1)}{(q + x)^{r+2}} dx = \frac{r}{q^{r+1}} \quad (\text{IV, 289}).$$

$$3) \int \sin p x \frac{x dx}{(q^2 + x^2)^2} = \frac{\pi}{4q} p e^{-pq} \quad (\text{VIII, 527}).$$

$$4) \int \sin p x \frac{x^2 dx}{(q^2 + x^2)^2} = \frac{\pi}{4} (2 - pq) e^{-pq} \quad (\text{VIII, 527}).$$

$$5) \int \sin p x \frac{x dx}{(q^2 + x^2)^3} = \frac{\pi}{16q^2} (pq + 1) p e^{-pq} \quad (\text{IV, 289}).$$

$$6) \int \sin p x \frac{x dx}{(q^2 + x^2)^4} = \frac{\pi}{16q^3} (3 + 3pq + p^2 q^2) p e^{-pq} \quad (\text{IV, 289}).$$

$$7) \int \cos p x \frac{dx}{(q^2 + x^2)^2} = \frac{\pi}{1q} (1 + pq) e^{-pq} \quad (\text{VIII, 527}).$$

- $$8) \int \cos px \frac{x^2 dx}{(q^2 + x^2)^2} = \frac{\pi}{4q} (1 - pq) e^{-pq} \text{ (VIII, 527).}$$
- $$9) \int \cos px \frac{dx}{(q^2 + x^2)^2} = \frac{\pi}{16q^3} (3 + 3pq + p^2 q^2) e^{-pq} \text{ (IV, 289).}$$
- $$10) \int \sin px \frac{x dx}{(q^2 + x^2)^{a+1}} = \frac{\pi}{1^{a/2}} \frac{e^{-pq}}{2^{a+1}} \sum_0^{\infty} \frac{(a-n)^{1/2}}{2^{n/2}} \frac{p^{a-n}}{q^{a+n}} \text{ (VIII, 489).}$$
- $$11) \int \cos px \frac{dx}{(q^2 + x^2)^{a+1}} = \frac{\pi}{1^{a/2}} \frac{e^{-pq}}{2^{a+1}} \sum_0^{\infty} \frac{(a-n+1)^{1/2}}{2^{n/2}} \frac{p^{a-n}}{q^{a+n+1}} \text{ (VIII, 490).}$$
- $$12) \int \{(1-x^2) \cos 2x + 2x \sin 2x\} \frac{dx}{(1+x^2)^2} = \frac{2\pi}{e^2} \text{ (IV, 291).}$$

- $$1) \int \sin px \frac{x dx}{(q^2 - x^2)^2} = -\frac{p\pi}{4q} \sin pq \text{ (VIII, 565).}$$
- $$2) \int \sin px \frac{x^2 dx}{(q^2 - x^2)^2} = \frac{\pi}{4} (2 \cos pq - pq \sin pq) \text{ (VIII, 565).}$$
- $$3) \int \cos px \frac{dx}{(q^2 - x^2)^2} = \frac{\pi}{4q^3} (\sin pq - pq \cos pq) \text{ (VIII, 565).}$$
- $$4) \int \cos px \frac{x^2 dx}{(q^2 - x^2)^2} = -\frac{\pi}{4q} (\sin pq + pq \cos pq) \text{ (VIII, 565).}$$
- $$5) \int \sin 4srx \cdot Tgr x \frac{dx}{(q^2 - x^2)^2} = \frac{\pi}{4q^2} \left\{ 2 \sin^2 2sqr \cdot Tgqr + \frac{1}{2} qr \sec^2 qr \cdot [-1 + 2s \cos \{(2s+1)2qr\}] + \right. \\ \left. + (2s+1) \cos 4sqr\} - 4sqr \cos 4sqr \right\} \text{ (H, 131).}$$
- $$6) \int \sin 4srx \cdot Tgr x \frac{x^2 dx}{(q^2 - x^2)^2} = \frac{\pi}{4q} \left\{ \frac{1}{2} qr \sec^2 qr \cdot [-1 + 2s \cos \{(2s+1)2qr\}] + \right. \\ \left. + (2s+1) \cos 4sqr\} - 2 \sin^2 2sqr \cdot Tgqr - 4sqr \cos 4sqr \right\} \text{ (H, 131).}$$
- $$7) \int \sin^2 2srx \cdot Tgr x \frac{x dx}{(q^2 - x^2)^2} = \frac{\pi r}{4q} \left\{ \frac{1}{2} \sec^2 qr \cdot [2s \sin \{(2s+1)2qr\} + (2s+1) \sin 4sqr] - \right. \\ \left. - 2s \sin 4sqr \right\} \text{ (H, 132).}$$

- $$8) \int \sin^2 srx \cdot \operatorname{Tgr} x \frac{x^2 dx}{(q^2 - x^2)^2} = \frac{\pi}{8} \left\{ 1 + \sin 4sqr \cdot \operatorname{Tg} qr + \frac{1}{2} qr \sec^2 qr \cdot [2s \sin \{(2s+1)2qr\} + (2s+1) \sin 4sqr] - 4sqr \sin 4sqr \right\} \text{ (H, 132).}$$
- $$9) \int \sin 2srx \cdot \operatorname{Cot} rx \frac{dx}{(q^2 - x^2)^2} = \frac{\pi}{4q^2} \left\{ 2 \sin^2 sqr \cdot \operatorname{Cot} qr - \frac{1}{2} qr \operatorname{Cosec}^2 qr \cdot [-1 + s \cos \{(s-1)2qr\} - (s-1) \cos 2sqr] - 2sqr \cos 2sqr \right\} \text{ (H, 128).}$$
- $$10) \int \sin 2srx \cdot \operatorname{Cot} rx \frac{x^2 dx}{(q^2 - x^2)^2} = \frac{-\pi}{4q} \left\{ 2 \sin^2 sqr \cdot \operatorname{Cot} qr + \frac{1}{2} qr \operatorname{Cosec}^2 qr \cdot [-1 + s \cos \{(s-1)2qr\} - (s-1) \cos 2sqr] + 2sqr \cos 2sqr \right\} \text{ (H, 128).}$$
- $$11) \int \sin^2 srx \cdot \operatorname{Cot} rx \frac{x dx}{(q^2 - x^2)^2} = \frac{-\pi r}{4q} \left\{ \frac{1}{4} \operatorname{Cosec}^2 qr \cdot [s \sin \{(s-1)2qr\} - (s-1) \sin 2sqr] + sqr \sin 2sqr \right\} \text{ (H, 128).}$$
- $$12) \int \sin^2 srx \cdot \operatorname{Cot} rx \frac{x^2 dx}{(q^2 - x^2)^2} = \frac{\pi}{8} \left\{ \sin 2sqr \cdot \operatorname{Cot} qr - \frac{1}{2} qr \operatorname{Cosec}^2 qr \cdot [s \sin \{(s-1)2qr\} - (s-1) \sin 2sqr] - 2sqr \sin 2sqr - 1 \right\} \text{ (H, 129).}$$
- $$13) \int \sin^s rx \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (sr + \dots) x \right\} \frac{x dx}{(q^2 - x^2)^2} = \frac{\pi}{2q} \sin^s qr \dots \left\{ sr \operatorname{Cosec} qr \cdot \sin \left\{ \frac{1}{2} (s-1) \pi - (s+1) qr \right\} + \dots \right\} \text{ (H, 107).}$$
- $$14) \int \sin^s rx \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (sr + \dots) x \right\} \frac{x^2 dx}{(q^2 - x^2)^2} = \frac{\pi}{4} \left\{ 2^{1-s-\dots} - \sin^s qr \dots \left(\cos \left\{ (s + \dots) \frac{1}{2} \pi - (sr + \dots) q \right\} - q \left[sr \operatorname{Cosec} qr \cdot \sin \left\{ \frac{1}{2} (s-1) \pi - (s+1) qr \right\} + \dots \right] \right) \right\} \text{ (H, 108).}$$
- $$15) \int \sin^s rx \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (sr + \dots) x \right\} \frac{dx}{(q^2 - x^2)^2} = \frac{-\pi}{4q^2} \sin^s qr \dots \left\{ \sin \left\{ (s + \dots) \frac{1}{2} \pi - (sr + \dots) q \right\} + q \left[sr \operatorname{Cosec} qr \cdot \cos \left\{ \frac{1}{2} (s-1) \pi - (s+1) qr \right\} + \dots \right] \right\} \text{ (H, 107).}$$
- $$16) \int \sin^s rx \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (sr + \dots) x \right\} \frac{x^2 dx}{(q^2 - x^2)^2} = \frac{\pi}{4q} \sin^s qr \dots \left\{ \sin \left\{ (s + \dots) \frac{1}{2} \pi - (sr + \dots) q \right\} - q \left[sr \operatorname{Cosec} qr \cdot \cos \left\{ \frac{1}{2} (s-1) \pi - (s+1) qr \right\} + \dots \right] \right\} \text{ (H, 107).}$$

$$17) \int \cos^s r x \dots \sin \{(sr + \dots)x\} \frac{x dx}{(q^2 - x^2)^2} = \frac{\pi}{2q} \cos^s q r \dots \{sr \operatorname{Sec} q r \cdot \sin \{(s+1)qr\} + \dots\} \quad (\text{H, 105}).$$

$$18) \int \cos^s r x \dots \sin \{(sr + \dots)x\} \frac{x^3 dx}{(q^2 - x^2)^2} = \frac{\pi}{4} \left\{ \cos^s q r \dots \{2 \cos \{(sr + \dots)q\} - q \right. \\ \left. [sr \operatorname{Sec} q r \cdot \sin \{(s+1)qr\} + \dots]\} - 2^{1-s} \dots \right\} \quad (\text{H, 105}).$$

$$19) \int \cos^s r x \dots \cos \{(sr + \dots)x\} \frac{dx}{(q^2 - x^2)^2} = \frac{\pi}{4q^2} \cos^s q r \dots \left\{ \sin \{(sr + \dots)q\} - q \right. \\ \left. \{sr \operatorname{Sec} q r \cdot \cos \{(s+1)qr\} + \dots\} \right\} \quad (\text{H, 105}).$$

$$20) \int \cos^s r x \dots \cos \{(sr + \dots)x\} \frac{x^3 dx}{(q^2 - x^2)^2} = -\frac{\pi}{4q} \cos^s q r \dots \left\{ \sin \{(sr + \dots)q\} + q \right. \\ \left. \{sr \operatorname{Sec} q r \cdot \cos \{(s+1)qr\} + \dots\} \right\} \quad (\text{H, 105}).$$

$$21) \int \sin^s r x \dots \cos^t p x \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (sr + \dots + tp + \dots)x \right\} \frac{x dx}{(q^2 - x^2)^2} = \frac{\pi}{2q} \sin^s q r \dots \\ \dots \cos^t p q \dots \left\{ sr \operatorname{Cosec} q r \cdot \sin \left\{ (s-1) \frac{1}{2} \pi - (s+1)qr \right\} + \dots + tp \operatorname{Sec} p q \cdot \sin \{(t+1)pq\} + \dots \right\} \quad (\text{H, 109}).$$

$$22) \int \sin^s r x \dots \cos^t p x \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (sr + \dots + tp + \dots)x \right\} \frac{x^3 dx}{(q^2 - x^2)^2} = \frac{\pi}{4} \left\{ 2^{1-s} \dots \dots \dots \right. \\ \dots \sin^s q r \dots \cos^t p q \dots \left(\cos \left\{ (s + \dots) \frac{1}{2} \pi - (sr + \dots + tp + \dots)q \right\} + q \left[sr \operatorname{Cosec} q r \cdot \right. \right. \\ \left. \left. \sin \left\{ (s-1) \frac{1}{2} \pi - (s+1)qr \right\} + \dots + tp \operatorname{Sec} p q \cdot \sin \{(t+1)pq\} + \dots \right] \right) \left. \right\} \quad (\text{H, 110}).$$

$$23) \int \sin^s r x \dots \cos^t p x \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (sr + \dots + tp + \dots)x \right\} \frac{dx}{(q^2 - x^2)^2} = -\frac{\pi}{4q^2} \\ \sin^s q r \dots \cos^t p q \dots \left\{ \sin \left\{ (s + \dots) \frac{1}{2} \pi - (sr + \dots + tp + \dots)q \right\} + q \left[sr \operatorname{Cosec} q r \cdot \right. \right. \\ \left. \left. \cos \left\{ (s-1) \frac{1}{2} \pi - (s+1)qr \right\} + \dots + tp \operatorname{Sec} p q \cdot \cos \{(t+1)pq\} + \dots \right] \right\} \quad (\text{H, 109}).$$

$$24) \int \sin^s r x \dots \cos^t p x \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (sr + \dots + tp + \dots)x \right\} \frac{x^3 dx}{(q^2 - x^2)^2} = \frac{\pi}{4q} \sin^s q r \dots \\ \dots \cos^t p q \dots \left\{ \sin \left\{ (s + \dots) \frac{1}{2} \pi - (sr + \dots + tp + \dots)q \right\} - q \left[sr \operatorname{Cosec} q r \cdot \cos \left\{ (s-1) \frac{1}{2} \pi - \right. \right. \right. \\ \left. \left. \left. - (s+1)qr \right\} + \dots + tp \operatorname{Sec} p q \cdot \cos \{(t+1)pq\} + \dots \right] \right\} \quad (\text{H, 109}).$$

$$25) \int \sin^s r x \dots \cos^t p x \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - u x \right\} \frac{x dx}{(q^2 - x^2)^2} = -\frac{\pi}{2q} \sin^s q r \dots \cos^t p q \dots$$

$$\left\{ \cos \{ (u - sr - \dots - tp - \dots) q \} \cdot \left[sr \operatorname{Cosec} q r \cdot \sin \left\{ (s-1) \frac{1}{2} \pi - (s+1) q r \right\} + \dots + \right. \right.$$

$$\left. + tp \operatorname{Sec} p q \cdot \sin \{ (t+1) p q \} + \dots \right] + (u - sr - \dots - tp - \dots) q$$

$$\sin \{ (u - sr - \dots - tp - \dots) q \} \} \quad (\text{H, 124*}).$$

$$26) \int \sin^s r x \dots \cos^t p x \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - u x \right\} \frac{x^2 dx}{(q^2 - x^2)^2} = -\frac{\pi}{2} \sin^s q r \dots \cos^t p q \dots$$

$$\left\{ \cos \left\{ (s + \dots) \frac{1}{2} \pi - q u \right\} + q \cos \{ (u - sr - \dots - tp - \dots) q \} \cdot \left[sr \operatorname{Cosec} q r \cdot \right. \right.$$

$$\sin \left\{ (s-1) \frac{1}{2} \pi - (s+1) q r \right\} + \dots + tp \operatorname{Sec} p q \cdot \sin \{ (t+1) p q \} + \dots \right] +$$

$$\left. + (u - sr - \dots - tp - \dots) q \sin \{ (u - sr - \dots - tp - \dots) q \} \right\} \quad (\text{H, 125*}).$$

$$27) \int \sin^s r x \dots \cos^t p x \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - u x \right\} \frac{dx}{(q^2 - x^2)^2} = -\frac{\pi}{4q^2} \sin^s q r \dots \cos^t p q \dots$$

$$\left\{ \sin \left\{ (s + \dots) \frac{1}{2} \pi - q u \right\} + q \cos \{ (u - sr - \dots - tp - \dots) q \} \cdot \left[(u - sr - \dots - tp - \dots) + \right. \right.$$

$$\left. + sr \operatorname{Cosec} q r \cdot \cos \left\{ (s-1) \frac{1}{2} \pi - (s+1) q r \right\} + \dots + tp \operatorname{Sec} p q \cdot \cos \{ (t+1) p q \} + \dots \right] \right\}$$

$$(\text{H, 124*}).$$

$$28) \int \sin^s r x \dots \cos^t p x \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - u x \right\} \frac{x^2 dx}{(q^2 - x^2)^2} = \frac{\pi}{4q} \sin^s q r \dots \cos^t p q \dots$$

$$\left\{ \sin \left\{ (s + \dots) \frac{1}{2} \pi - q u \right\} - q \cos \{ (u - sr - \dots - tp - \dots) q \} \cdot \left[(u - sr - \dots - tp - \dots) + \right. \right.$$

$$\left. + sr \operatorname{Cosec} q r \cdot \cos \left\{ (s-1) \frac{1}{2} \pi - (s+1) q r \right\} + \dots + tp \operatorname{Sec} p q \cdot \cos \{ (t+1) p q \} + \dots \right] \right\}$$

$$(\text{H, 124*}). \text{ Dans 25) à 28) on a } u > sr + \dots + tp + \dots$$

$$29) \int \sin p x \frac{x dx}{(q^2 - x^2)^{a+1}} = \frac{1}{1^{a+1}} \left(\frac{p}{2q} \right)^a \frac{\pi}{2} \sum_0^{\infty} \frac{(a-n)^{2n+1}}{1^{n+1}} \left(\frac{1}{2pq} \right)^n \cos \left\{ \frac{a-n}{2} \pi + p q \right\} \quad (\text{VIII, 490}).$$

$$30) \int \cos p x \frac{dx}{(q^2 - x^2)^{a+1}} = \frac{1}{1^{a+1}} \left(\frac{-p}{2q} \right)^a \frac{\pi}{2q} \sum_0^{\infty} \frac{(a-n+1)^{2n+1}}{1^{n+1}} \left(\frac{-1}{2pq} \right)^n \sin \left\{ \frac{a-n}{2} \pi + p q \right\}$$

$$(\text{VIII, 490}).$$

- 1) $\int \sin px \frac{dx}{(q^2 + x^2)x} = \frac{\pi}{2q^2} (1 - e^{-pq})$ (VIII, 441).
- 2) $\int \sin^2 2srx \cdot \text{Tgr} x \frac{dx}{(q^2 + x^2)x} = \frac{\pi}{4q^2} (1 - e^{-2sqr}) \frac{1 - e^{-2qr}}{1 + e^{-2qr}}$ (H, 174).
- 3) $\int \sin^2 srx \cdot \text{Cotr} x \frac{dx}{(q^2 + x^2)x} = \frac{\pi}{4q^2} \left\{ 2s - (1 - e^{-2sqr}) \frac{1 + e^{-2qr}}{1 - e^{-2qr}} \right\}$ (H, 172).
- 4) $\int \sin px \frac{dx}{(q^2 - x^2)x} = \frac{\pi}{2q^2} (1 - \cos pq)$ (H, 139).
- 5) $\int \sin^2 2srx \cdot \text{Tgr} x \frac{dx}{(q^2 - x^2)x} = -\frac{\pi}{4q^2} \sin 4sqr \cdot \text{Tg} qr$ (H, 174).
- 6) $\int \sin^2 srx \cdot \text{Cotr} x \frac{dx}{(q^2 - x^2)x} = \frac{\pi}{4q^2} \{ 2s - \sin 2sqr \cdot \text{Cot} qr \}$ (H, 172).
- 7) $\int \sin 2px \frac{dx}{(q^4 + x^4)x} = \frac{\pi}{2q^4} \{ 1 - e^{-pq\sqrt{2}} \cos(pq\sqrt{2}) \}$ (VIII, 527).
- 8) $\int \sin^2 2srx \cdot \text{Tgr} x \frac{dx}{(4q^4 + x^4)x} = \frac{\pi}{8q^4} \frac{1 - e^{-4qr} - e^{-4sqr} \cos 4sqr - 2e^{-(s+1)^2qr} \sin 4sqr}{1 + \frac{\sin 2qr + e^{-(s+1)^2qr} \cos 4sqr}{+ 2e^{-2qr} \cos 2qr + e^{-4qr}}} \text{ (H, 174).}$
- 9) $\int \sin^2 srx \cdot \text{Cotr} x \frac{dx}{(4q^4 + x^4)x} = \frac{\pi}{8q^4} \left\{ 2s - \frac{1 - e^{-4qr} - e^{-2sqr} \cos 2sqr + 2e^{-(s+1)^2qr} \sin 2sqr}{1 - \frac{\sin 2qr + e^{-(s+2)^2qr} \cos 2sqr}{- 2e^{-2qr} \cos 2qr + e^{-4qr}}} \right\} \text{ (H, 172).}$
- 10) $\int \sin px \frac{dx}{(q^4 - x^4)x} = \frac{\pi}{4q^4} (2 - e^{-pq} - \cos pq)$ (H, 139).
- 11) $\int \sin^2 2srx \cdot \text{Tgr} x \frac{dx}{(q^4 - x^4)x} = \frac{\pi}{8q^4} \left\{ (1 - e^{-4sqr}) \frac{1 - e^{-2qr}}{1 + e^{-2qr}} - \sin 4sqr \cdot \text{Tg} qr \right\}$ (H, 175).
- 12) $\int \sin^2 srx \cdot \text{Cotr} x \frac{dx}{(q^4 - x^4)x} = \frac{\pi}{8q^4} \left\{ 4s - \sin 2sqr \cdot \text{Cot} qr - (1 - e^{-2sqr}) \frac{1 + e^{-2qr}}{1 - e^{-2qr}} \right\}$
(H, 172).
- 13) $\int \sin^2 px \frac{dx}{(q^2 + x^2)x^2} = \frac{\pi}{4q^2} \left\{ 2p - \frac{1}{q} (1 - e^{-pq}) \right\}$ V. T. 172, N. 1.
- 14) $\int \sin^2 px \frac{dx}{(q^2 - x^2)x^2} = \frac{\pi}{4q^2} \left\{ 2p - \frac{1}{q} \sin 2pq \right\}$ V. T. 172, N. 4.

$$15) \int \sin p x \frac{dx}{(1+x^2)x^{1-q}} = \frac{1}{4} (-1)^{q-1} \pi e^p \operatorname{Cosec} \left(\frac{q-1}{2} \pi \right) = 16) - \int \cos p x \frac{dx}{(1+x^2)x^{1-q}} \quad (\text{IV, 294}).$$

$$17) \int \sin p x \frac{dx}{(q^2+x^2)x^{1-a}} = (-1)^a \frac{\pi}{2q^{1-a}} (e^{-pq} - 1) = 18) q \int (\cos p x - 1) \frac{dx}{(q^2+x^2)x^{1-a}} \quad (\text{VIII, 586}).$$

$$19) \int \sin p x \frac{dx}{(1-x^2)x^{1-q}} = \frac{1}{8} \pi \sin \left(\frac{q-1}{2} \pi - p \right) \cdot \operatorname{Cosec} \left(\frac{q-1}{2} \pi \right) \quad (\text{IV, 294}).$$

$$20) \int \cos p x \frac{dx}{(1-x^2)x^{1-q}} = -\frac{1}{8} \pi \cos \left(\frac{q-1}{2} \pi - p \right) \cdot \operatorname{Cosec} \left(\frac{q-1}{2} \pi \right) \quad (\text{IV, 294}).$$

$$21) \int \cos \left(p x + \frac{1}{2} r \pi \right) \frac{dx}{(q^2+x^2)x^r} = \frac{\pi}{2q^{r+1}} e^{-pq} \quad (\text{IV, 294}).$$

$$22) \int \sin p x \frac{dx}{(q^2+x^2)^2 x} = \frac{\pi}{2q^3} \left\{ 1 - \frac{1}{2} e^{-pq} (2 + pq) \right\} \quad (\text{VIII, 527}).$$

$$1) \int \sin^s r x \cdot \sin^{s_1} r_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) x \right\} \frac{dx}{(q^2+x^2)x} = \\ = \frac{\pi}{2^{1+s+s_1+\dots} q^2} (1 - e^{-2qr})^s (1 - e^{-2q r_1})^{s_1} \dots \quad (\text{H, 147}).$$

$$2) \int \cos^s r x \cdot \cos^{s_1} r_1 x \dots \sin \left\{ (sr + s_1 r_1 + \dots) x \right\} \frac{dx}{(q^2+x^2)x} = \frac{\pi}{2q^2} \{ 1 - 2^{-s-s_1-\dots} \\ (1 + e^{-2qr})^s (1 + e^{-2q r_1})^{s_1} \dots \} \quad (\text{H, 145}).$$

$$3) \int \sin^s r x \cdot \sin^{s_1} r_1 x \dots \cos^t p x \cdot \cos^{t_1} p_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots + \\ + tp + t_1 p_1 + \dots) x \right\} \frac{dx}{(q^2+x^2)x} = \frac{\pi}{2^{1+s+s_1+\dots+t+t_1+\dots} q^2} (1 - e^{-2qr})^s (1 - e^{-2q r_1})^{s_1} \dots \\ \dots (1 + e^{-2pq})^t (1 + e^{-2p_1 q})^{t_1} \dots \quad (\text{H, 149}).$$

$$4) \int \sin^s r x \cdot \sin^{s_1} r_1 x \dots \cos^t p x \cdot \cos^{t_1} p_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - ux \right\} \frac{dx}{(q^2+x^2)x} = \\ = \frac{\pi}{2^{1+s+s_1+\dots+t+t_1+\dots} q^2} (e^{qr} - e^{-qr})^s (e^{q r_1} - e^{-q r_1})^{s_1} \dots (e^{pq} + e^{-pq})^t (e^{p_1 q} + e^{-p_1 q})^{t_1} \dots e^{-qu} \\ (\text{H, 162}).$$

$$5) \int \sin^s r x . \sin^{s_1} r_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) x \right\} \frac{dx}{(q^2 - x^2)x} = \\ = \frac{\pi}{2q^2} \sin^s q r . \sin^{s_1} q r_1 \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) q \right\} \quad (\text{H, 147}).$$

$$6) \int \cos^s r x . \cos^{s_1} r_1 x \dots \sin \left\{ (sr + s_1 r_1 + \dots) \right\} \frac{dx}{(q^2 - x^2)x} = \frac{\pi}{2q^2} \left[1 - \cos^s q r . \cos^{s_1} q r_1 \dots \right. \\ \left. \dots \cos \left\{ (sr + s_1 r_1 + \dots) q \right\} \right] \quad (\text{H, 145}).$$

$$7) \int \sin^s r x . \sin^{s_1} r_1 x \dots \cos^t p x . \cos^{t_1} p_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots + \right. \\ \left. + tp + t_1 p_1 + \dots) x \right\} \frac{dx}{(q^2 - x^2)x} = \frac{\pi}{2q^2} \sin^s q r . \sin^{s_1} q r_1 \dots \cos^t p q . \cos^{t_1} p_1 q \dots \\ \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots + tp + t_1 p_1 + \dots) q \right\} \quad (\text{H, 149}).$$

$$8) \int \sin^s r x . \sin^{s_1} r_1 x \dots \cos^t p x . \cos^{t_1} p_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - ux \right\} \frac{dx}{(q^2 - x^2)x} = \\ = \frac{\pi}{2q^2} \sin^s q r . \sin^{s_1} q r_1 \dots \cos^t p q . \cos^{t_1} p_1 q \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - qu \right\} \quad (\text{H, 163}).$$

$$9) \int \sin^s r x . \sin^{s_1} r_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) x \right\} \frac{dx}{(4q^4 + x^4)x} = \\ = \frac{\pi}{2^{3+s+s_1+\dots} q^4} (1 - 2e^{-sr} \cos 2qr + e^{-4qr})^{\frac{1}{4}} (1 - 2e^{-s_1 r_1} \cos 2qr_1 + e^{-4q r_1})^{\frac{1}{4}} \dots \\ \dots \cos \left\{ s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} - \cos 2qr} \right) + s_1 \operatorname{Arctg} \left(\frac{\sin 2qr_1}{e^{2q r_1} - \cos 2qr_1} \right) + \dots \right\} \quad (\text{H, 147}).$$

$$10) \int \cos^s r x . \cos^{s_1} r_1 x \dots \sin \left\{ (sr + s_1 r_1 + \dots) x \right\} \frac{dx}{(4q^4 + x^4)x} = \frac{\pi}{8q^4} \left\{ 1 - 2e^{-sr} \cos 2qr + e^{-4qr} \right\}^{\frac{1}{4}} \dots \\ (1 + 2e^{-s_1 r_1} \cos 2qr_1 + e^{-4q r_1})^{\frac{1}{4}} \dots \\ \dots \cos \left\{ s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} + \cos 2qr} \right) + s_1 \operatorname{Arctg} \left(\frac{\sin 2qr_1}{e^{2q r_1} + \cos 2qr_1} \right) + \dots \right\} \quad (\text{H, 145}).$$

$$11) \int \sin^s r x . \sin^{s_1} r_1 x \dots \cos^t p x . \cos^{t_1} p_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots + \right. \\ \left. + tp + t_1 p_1 + \dots) x \right\} \frac{dx}{(4q^4 + x^4)x} = \frac{\pi}{2^{3+s+s_1+\dots+t+t_1+\dots} q^4} (1 - 2e^{-sr} \cos 2qr + e^{-4qr})^{\frac{1}{4}} \dots \\ (1 - 2e^{-s_1 r_1} \cos 2qr_1 + e^{-4q r_1})^{\frac{1}{4}} \dots (1 + 2e^{-tp} \cos 2pq + e^{-4pq})^{\frac{1}{4}} (1 + 2e^{-t_1 p_1} \cos 2p q_1 + e^{-4p q_1})^{\frac{1}{4}} \dots$$

$$\begin{aligned} & \cos 2p_1 q + e^{-2p_1 q} \}^{\frac{1}{2}t}, \dots \cos \left\{ t \operatorname{Arctg} \left(\frac{\sin 2pq}{e^{2pq} + \cos 2pq} \right) + t_1 \operatorname{Arctg} \left(\frac{\sin 2p_1 q}{e^{2p_1 q} + \cos 2p_1 q} \right) + \dots - \right. \\ & \left. - s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} - \cos 2qr} \right) - s_1 \operatorname{Arctg} \left(\frac{\sin 2qr_1}{e^{2qr_1} - \cos 2qr_1} \right) - \dots \right\} \quad (\text{H, 149}). \end{aligned}$$

$$\begin{aligned} 12) \int \sin^s r x \cdot \sin^{s_1} r_1 x \dots \cos^t p x \cdot \cos^{t_1} p_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - ux \right\} \frac{dx}{(4q^4 + x^4)x} = \\ = \frac{\pi}{2^{s+s_1+\dots+t+t_1+\dots} q^4} (e^{2qr} - 2\cos 2qr + e^{-2qr})^{\frac{1}{2}s} (e^{2qr_1} - 2\cos 2qr_1 + e^{-2qr_1})^{\frac{1}{2}s_1} \dots \\ \dots (e^{2pq} + 2\cos 2pq + e^{-2pq})^{\frac{1}{2}t} (e^{2p_1 q} + 2\cos 2p_1 q + e^{-2p_1 q})^{\frac{1}{2}t_1} \dots e^{-qu} \\ \cos \left\{ t \operatorname{Arctg} \left(\frac{\sin 2pq}{e^{2pq} + \cos 2pq} \right) + t_1 \operatorname{Arctg} \left(\frac{\sin 2p_1 q}{e^{2p_1 q} + \cos 2p_1 q} \right) + \dots - s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} - \cos 2qr} \right) - \right. \\ \left. - s_1 \operatorname{Arctg} \left(\frac{\sin 2qr_1}{e^{2qr_1} - \cos 2qr_1} \right) - \dots \right\} \quad (\text{H, 163}). \end{aligned}$$

$$\begin{aligned} 13) \int \sin^s r x \cdot \sin^{s_1} r_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) x \right\} \frac{dx}{(q^4 - x^4)x} = \\ = \frac{\pi}{4q^4} \left\{ 2^{-s-s_1-\dots} (1 + e^{-2qr})^s (1 - e^{-2qr_1})^{s_1} \dots + \sin^s qr \cdot \sin^{s_1} qr_1 \dots \right. \\ \left. \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) q \right\} \right\} \quad (\text{H, 147}). \end{aligned}$$

$$\begin{aligned} 14) \int \cos^s r x \cdot \cos^{s_1} r_1 x \dots \sin \left\{ (sr + s_1 r_1 + \dots) x \right\} \frac{dx}{(q^4 - x^4)x} = \frac{\pi}{4q^4} \left\{ 2 - 2^{-s-s_1-\dots} (1 + e^{-2qr})^s \right. \\ \left. (1 - e^{-2qr_1})^{s_1} \dots - \cos^s qr \cdot \cos^{s_1} qr_1 \dots \cos \left\{ (sr + s_1 r_1 + \dots) q \right\} \right\} \quad (\text{H, 145}). \end{aligned}$$

$$\begin{aligned} 15) \int \sin^s r x \cdot \sin^{s_1} r_1 x \dots \cos^t p x \cdot \cos^{t_1} p_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots + \right. \\ \left. + tp + t_1 p_1 + \dots) x \right\} \frac{dx}{(q^4 - x^4)x} = \frac{\pi}{4q^4} \left\{ 2^{-s-s_1-\dots-t-t_1-\dots} (1 - e^{-2qr})^s (1 - e^{-2qr_1})^{s_1} \dots \right. \\ \dots (1 + e^{-2pq})^t (1 + e^{-2p_1 q})^{t_1} \dots + \sin^s qr \cdot \sin^{s_1} qr_1 \dots \cos^t pq \cdot \cos^{t_1} p_1 q \dots \\ \left. \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots + tp + t_1 p_1 + \dots) q \right\} \right\} \quad (\text{H, 149}). \end{aligned}$$

$$\begin{aligned} 16) \int \sin^s r x \cdot \sin^{s_1} r_1 x \dots \cos^t p x \cdot \cos^{t_1} p_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - ux \right\} \frac{dx}{(q^4 - x^4)x} = \frac{\pi}{4q^4} \\ \left\{ 2^{-s-s_1-\dots-t-t_1-\dots} (e^{qr} - e^{-qr})^s (e^{qr_1} - e^{-qr_1})^{s_1} \dots (e^{pq} + e^{-pq})^t (e^{p_1 q} + e^{-p_1 q})^{t_1} \dots e^{-qu} + \right. \\ \left. + \sin^s qr \cdot \sin^{s_1} qr_1 \dots \cos^t pq \cdot \cos^{t_1} p_1 q \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - qu \right\} \right\} \quad (\text{H, 163}). \end{aligned}$$

Dans 4), 8), 12) et 16) on a $u > sr + s_1 r_1 + \dots + tp + t_1 p_1 + \dots$

$$17) \int \left\{ \frac{\sin x}{x} - \frac{1}{1+x} \right\} \frac{dx}{x} = 1 - \Lambda \quad \text{V. T. 158, N. 3 et T. 173, N. 18.}$$

$$18) \int \left\{ \cos x - \frac{1}{1+x} \right\} \frac{dx}{x} = -\Lambda \quad (\text{VIII, 457}).$$

$$19) \int \left\{ \frac{\cos x - 1}{x^2} + \frac{1}{2(1+x)} \right\} \frac{dx}{x} = \frac{1}{2} \Lambda - \frac{3}{4} \quad (\text{IV, 293}).$$

$$20) \int \{ \cos qx - \cos px \} \frac{dx}{(1+x^2)x^2} = \frac{1}{2} \pi (\sigma^p - \sigma^q) + \frac{1}{2} \pi (p - q) \quad (\text{IV, 294}).$$

$$21) \int \left\{ \cos x - \frac{1}{1+x^2} \right\} \frac{dx}{x} = -\Lambda \quad (\text{VIII, 671}). \quad 22) \int \left\{ \cos(x^2) - \frac{1}{1+x^2} \right\} \frac{dx}{x} = -\frac{1}{2} \Lambda \quad (\text{VIII, 671}).$$

$$23) \int \left\{ \cos(x^{2^a}) - \frac{1}{1+x^2} \right\} \frac{dx}{x} = -\frac{1}{2^a} \Lambda = \quad 24) \int \left\{ \cos(x^{2^a}) - \frac{1}{1+x^{2^a+1}} \right\} \frac{dx}{x} \quad (\text{VIII, 701}).$$

$$1) \int \sin px \frac{x dx}{(q^2 + x^2)(r^2 + x^2)} = \frac{\pi}{2(q^2 - r^2)} (\sigma^{pr} - \sigma^{pq}) \quad (\text{VIII, 330}).$$

$$2) \int \sin px \frac{x^3 dx}{(q^2 + x^2)(r^2 + x^2)} = \frac{\pi}{2(q^2 - r^2)} (q^2 \sigma^{pr} - r^2 \sigma^{pq}) \quad (\text{VIII, 330}).$$

$$3) \int \sin px \frac{x dx}{(q^2 - x^2)(r^2 - x^2)} = \frac{\pi}{2(q^2 - r^2)} \{ \cos pq - \cos pr \} \quad (\text{VIII, 331}).$$

$$4) \int \sin px \frac{x^3 dx}{(q^2 - x^2)(r^2 - x^2)} = \frac{\pi}{2(q^2 - r^2)} \{ q^2 \cos pq - r^2 \cos pr \} \quad (\text{VIII, 331*}).$$

$$5) \int \sin px \frac{x dx}{(q^2 + x^2)(q^4 - x^4)} = \frac{\pi}{8q^3} \{ (1 + pq) \sigma^{pq} - \cos pq \}$$

$$6) \int \sin px \frac{x^3 dx}{(q^2 + x^2)(q^4 - x^4)} = \frac{\pi}{8q^3} \{ (1 - pq) \sigma^{pq} - \cos pq \}$$

$$7) \int \sin px \frac{x^5 dx}{(q^2 + x^2)(q^4 - x^4)} = \frac{\pi}{8} \{ (pq - 3) \sigma^{pq} - \cos pq \}$$

Sur 5) à 7) voyez V. T. 161, N. 13, 15 et T. 170, N. 3, 4.

$$8) \int \sin px \frac{dx}{x(x^2 + 2^2)(x^2 + 4^2) \dots (x^2 + 4a^2)} = \frac{\pi}{2^{2a}} \frac{(-1)^{a-1}}{1^{2a-1}} \sum_{n=0}^{a-1} (-1)^n \binom{2a}{n} \sigma^{1(n-a)p} \quad (\text{VIII, 434}).$$

st. fract. à dén. prod. de bin.; TABLE 174, suite.
Dir. en num. à un fact. $\sin x$.

Lim. 0 et ∞ .

$$\int_0^\pi \frac{x dx}{(x^2+1^2)(x^2+3^2)\dots\{x^2+(2a+1)^2\}} = \frac{\pi}{2^{2a}} \frac{(-1)^a}{1^{2a+1/2}} \sum_{n=0}^a (-1)^n \binom{2a+1}{n} \\ (2a+1-2n)e^{(2n-2a-1)p} \quad (\text{VIII}, 434).$$

$$\int_0^\pi \left\{ \frac{p^2}{(r+x)^2} + \frac{q(q+1)}{(r+x)^{q+1}} \right\} dx = pr^{-q} \quad (\text{IV}, 295).$$

$$\int_0^\pi \frac{(r-x)^{-q} - (r+x)^{-q}}{2i} dx = \frac{\pi}{2\Gamma(q)} p^{q-1} e^{-pr} \quad (\text{VIII}, 445).$$

$$\int_0^\pi \frac{(r-x)^{-q} + (r+x)^{-q}}{2} x^{2a-1} dx = (-1)^{a-1} \frac{\pi}{2\Gamma(q)} \frac{d^{2a-1}}{dp^{2a-1}} \cdot p^{q-1} e^{-pr}$$

V. T. 175, N. 11.

$$\int_0^\pi \frac{(r-x)^{-q} - (r+x)^{-q}}{2i} x^{2a} dx = (-1)^a \frac{\pi}{2\Gamma(q)} \frac{d^{2a}}{dp^{2a}} \cdot p^{q-1} e^{-pr} \quad \text{V. T. 174, N. 11.}$$

$$\frac{1}{2} \pi x + pr \int_0^\pi \frac{(r-x)^{-q} - (r+x)^{-q}}{2i} x^a dx = \frac{\pi}{2\Gamma(q)} \frac{d^a}{dp^a} \cdot p^{q-1} e^{-pr}$$

V. T. 174, N. 13 et T. 175, N. 12.

$$\int_0^\pi \frac{dx}{(q^2+x^2)(r^2+x^2)} = \frac{\pi}{4qr(q^2-r^2)} \{q-r+r e^{-2pr} - q e^{-2pr}\} \quad (\text{VIII}, 539).$$

$$\int_0^\pi \frac{dx}{(q^2-x^2)(r^2-x^2)} = \frac{\pi}{4qr(q^2-r^2)} \{r \sin pq - q \sin pr\} \quad (\text{VIII}, 539).$$

. fract. à dén. prod. de bin.; TABLE 175.
r. en num. d' autre forme.

Lim. 0 et ∞ .

$$\int_0^\pi \frac{dx}{(q^2+x^2)(r^2+x^2)} = \frac{\pi}{2qr(q^2-r^2)} (q e^{-pr} - r e^{-qr}) \quad (\text{VIII}, 531).$$

$$\int_0^\pi \frac{x^2 dx}{(q^2+x^2)(r^2+x^2)} = \frac{\pi}{2(q^2-r^2)} (q e^{-pr} - r e^{-qr}) \quad (\text{VIII}, 531).$$

$$\int_0^\pi \frac{dx}{(q^2-x^2)(r^2-x^2)} = \frac{\pi}{2qr(q^2-r^2)} (q \sin pr - r \sin pq) \quad (\text{VIII}, 531).$$

$$\int_0^\pi \frac{x^2 dx}{(q^2-x^2)(r^2-x^2)} = \frac{\pi}{2(q^2-r^2)} (r \sin pr - q \sin pq) \quad (\text{VIII}, 531).$$

$$\int_0^\pi \frac{dx}{(q^2+x^2)(q^2-x^2)} = \frac{\pi}{8q^2} \{ \sin pq + (pq+2) e^{-pr} \}$$

$$\int_0^\pi \frac{x^2 dx}{(q^2+x^2)(q^2-x^2)} = \frac{\pi}{8q^2} (\sin pq - pq e^{-pr})$$

$$\int_0^\pi \frac{x^4 dx}{(q^2+x^2)(q^2-x^2)} = \frac{\pi}{8q^2} \{ \sin pq + (pq-2) e^{-pr} \}$$

Sur 5) à 7) voyez T. 161, N. 16, 18 et T. 170, N. 7, 8.

- $$8) \int \cos px \frac{dx}{(x^2+1^2)(x^2+3^2)\dots\{x^2+(2a+1)^2\}} = \frac{(-1)^a}{1^{2a+1/2}} \frac{\pi}{2^{2a+1}} \sum_0^a (-1)^n \binom{2a+1}{n} e^{(2n-2a-1)p} \text{ (VIII, 484).}$$
- $$9) \int \cos px \cdot \left\{ \frac{p^2}{(r+x)^2} + \frac{q(q+1)}{(r+x)^{q+1}} \right\} dx = \frac{q}{r^{q+1}} \text{ (IV, 295).}$$
- $$10) \int \cos px \frac{(r-xi)^{-q} + (r+xi)^{-q}}{2} dx = \frac{\pi}{2\Gamma(q)} p^{q-1} e^{-pr} \text{ (VIII, 445).}$$
- $$11) \int \cos px \frac{(r-xi)^{-q} + (r+xi)^{-q}}{2} x^{2a} dx = \frac{1}{2} (-1)^a \frac{\pi}{\Gamma(q)} \frac{d^{2a}}{dp^{2a}} \cdot p^{q-1} e^{-pr} \text{ V. T. 175, N. 10.}$$
- $$12) \int \cos px \frac{(r-xi)^{-q} - (r+xi)^{-q}}{2i} x^{2a-1} dx = (-1)^{a-1/2} \frac{\pi}{2\Gamma(q)} \frac{d^{2a-1}}{dp^{2a-1}} \cdot p^{q-1} e^{-pr} \text{ V. T. 174, N. 11.}$$
- $$13) \int \cos \left\{ \frac{1}{2} a\pi + px \right\} \frac{(r-xi)^{-q} + (r+xi)^{-q}}{2} x^a dx = \frac{\pi}{2\Gamma(q)} \frac{d^a}{dp^a} \cdot p^{q-1} e^{-pr} \text{ V. T. 174, N. 12 et T. 175, N. 11.}$$
- $$14) \int \cos^2 px \frac{dx}{(q^2+x^2)(r^2+x^2)} = \frac{\pi}{4qr(q^2-r^2)} (q-r+qe^{-2pr}-re^{-2pq}) \text{ (VIII, 539).}$$
- $$15) \int \cos^2 px \frac{dx}{(q^2-x^2)(r^2-x^2)} = \frac{\pi}{4qr(q^2-r^2)} (q \sin pr - r \sin pq) \text{ (VIII, 539).}$$
- $$16) \int \left\{ \frac{(r-xi)^{-q} - (r+xi)^{-q}}{2i} \sin px + \frac{(r-xi)^{-q} + (r+xi)^{-q}}{2} \cos px \right\} dx = \frac{\pi}{\Gamma(q)} p^{q-1} e^{-pr} [p>0], = 0 [p<0] \text{ V. T. 174, N. 11 et T. 175, N. 10.}$$
- $$17) \int \sin px \cdot \left\{ \frac{r+x}{q^2+(r+x)^2} - \frac{r-x}{q^2+(r-x)^2} \right\} dx = \pi e^{-pr} \cos pr \text{ (IV, 294).}$$

- $$1) \int \sin px \frac{x dx}{(x^2+q^2)^2+r^2} = \frac{\pi}{2r} e^{-p\lambda} \sin p\mu \text{ V. T. 176, N. 3.}$$
- $$2) \int \sin px \frac{x^2+q^2}{(x^2+q^2)^2+r^2} x dx = \frac{\pi}{2} e^{-p\lambda} \cos p\mu \text{ V. T. 176, N. 4.}$$
- $$3) \int \cos px \frac{dx}{(x^2+q^2)^2+r^2} = \frac{\pi}{2r} \frac{e^{-p\lambda}}{\sqrt{q^2+r^2}} (\mu \cos p\mu + \lambda \sin p\mu) \text{ (VIII, 526).}$$

$$4) \int \cos px \frac{x^2 + q^2}{(x^2 + q^2)^2 + r^2} dx = \frac{\pi}{2} \frac{e^{-p\lambda}}{\sqrt{q^4 + r^2}} (\lambda \cos p\mu - \mu \sin p\mu) \text{ (VIII, 526).}$$

$$\text{Dans 1) à 4) on a } \begin{bmatrix} 2\lambda^2 = \sqrt{q^4 + r^2} + q^2, \\ 2\mu^2 = \sqrt{q^4 + r^2} - q^2 \end{bmatrix}.$$

$$5) \int \sin px \frac{x dx}{x^4 + 2r^2 x^2 \cos 2\lambda + r^4} = \frac{\pi}{2r^2} e^{-pr \cos \lambda} \operatorname{Cosec} 2\lambda \cdot \sin(pr \sin \lambda) \text{ (VIII, 526).}$$

$$6) \int \sin px \frac{x^3 dx}{x^4 + 2r^2 x^2 \cos 2\lambda + r^4} = \frac{\pi}{2} e^{-pr \cos \lambda} \operatorname{Cosec} 2\lambda \cdot \sin(2\lambda - pr \sin \lambda) \text{ (VIII, 526).}$$

$$7) \int \cos px \frac{dx}{x^4 + 2r^2 x^2 \cos 2\lambda + r^4} = \frac{\pi}{2r^2} e^{-pr \cos \lambda} \operatorname{Cosec} 2\lambda \cdot \sin(\lambda + pr \sin \lambda) \text{ (VIII, 526).}$$

$$8) \int \cos px \frac{x^3 dx}{x^4 + 2r^2 x^2 \cos 2\lambda + r^4} = \frac{\pi}{2r} e^{-pr \cos \lambda} \operatorname{Cosec} 2\lambda \cdot \sin(\lambda - pr \sin \lambda) \text{ (VIII, 526).}$$

$$9) \int \sin px \frac{dx}{q^3 + q^2 x + qx^2 + x^3} = \frac{1}{4q^2} \{ e^{-pq} \operatorname{Ei}(pq) - e^{pq} \operatorname{Ei}(-pq) + 2 \operatorname{Ci}(pq) \cdot \sin pq - \\ - 2 \operatorname{Si}(pq) \cdot \cos pq - \pi(e^{-pq} - \cos pq) \}$$

$$10) \int \sin px \frac{x dx}{q^3 + q^2 x + qx^2 + x^3} = \frac{1}{4q} \{ e^{-pq} \operatorname{Ei}(pq) - e^{pq} \operatorname{Ei}(-pq) - 2 \operatorname{Ci}(pq) \cdot \sin pq + \\ + 2 \operatorname{Si}(pq) \cdot \cos pq + \pi(e^{-pq} - \cos pq) \}$$

$$11) \int \sin px \frac{x^3 dx}{q^3 + q^2 x + qx^2 + x^3} = \frac{1}{4} \{ e^{pq} \operatorname{Ei}(-pq) - e^{-pq} \operatorname{Ei}(pq) + 2 \operatorname{Ci}(pq) \cdot \sin pq - \\ - 2 \operatorname{Si}(pq) \cdot \cos pq + \pi(e^{-pq} + \cos pq) \} \text{ Sur 9) à 11) voyez T. 160, N. 1, 3, 4.}$$

$$12) \int \sin px \frac{dx}{q^3 - q^2 x + qx^2 - x^3} = \frac{1}{4q^2} \{ e^{-pq} \operatorname{Ei}(pq) - e^{pq} \operatorname{Ei}(-pq) + 2 \operatorname{Ci}(pq) \cdot \sin pq - \\ - 2 \operatorname{Si}(pq) \cdot \cos pq + \pi(e^{-pq} - \cos pq) \}$$

$$13) \int \sin px \frac{x dx}{q^3 - q^2 x + qx^2 - x^3} = \frac{1}{4q} \{ e^{pq} \operatorname{Ei}(-pq) - e^{-pq} \operatorname{Ei}(pq) + 2 \operatorname{Ci}(pq) \cdot \sin pq - \\ - 2 \operatorname{Si}(pq) \cdot \cos pq + \pi(e^{-pq} - \cos pq) \}$$

$$14) \int \sin px \frac{x^3 dx}{q^3 - q^2 x + qx^2 - x^3} = \frac{1}{4} \{ e^{pq} \operatorname{Ei}(-pq) - e^{-pq} \operatorname{Ei}(pq) + 2 \operatorname{Ci}(pq) \cdot \sin pq - \\ - 2 \operatorname{Si}(pq) \cdot \cos pq - \pi(e^{-pq} + \cos pq) \} \text{ Sur 12) à 14) voyez T. 160, N. 3, 4 et T. 161, N. 1.}$$

$$15) \int \cos px \frac{dx}{q^3 + q^2 x + qx^2 + x^3} = \frac{1}{4q^2} \{ e^{-pq} \operatorname{Ei}(pq) + e^{pq} \operatorname{Ei}(-pq) - 2 \operatorname{Ci}(pq) \cdot \cos pq - \\ - 2 \operatorname{Si}(pq) \cdot \sin pq + \pi(e^{-pq} + \sin pq) \}$$

F. Alg. irrat. fract.;

Circ. Dir. en num. mon.; Circ. de x .

TABLE 177, suite.

Lim. 0 et ∞ .

$$+\frac{3}{\sqrt{p}}-\frac{3}{2\sqrt{2q-p}}\}\sqrt{\frac{\pi}{2}}[3p>2q>p], =\frac{1}{8}\left\{-\frac{1}{2\sqrt{2q+3p}}+\frac{1}{\sqrt{3p}}+\frac{1}{2\sqrt{3p-2q}}-\right. \\ \left.-\frac{3}{2\sqrt{2q+p}}+\frac{3}{\sqrt{p}}+\frac{3}{2\sqrt{p-2q}}\right\}\sqrt{\frac{\pi}{2}}[p>2q] \text{ V. T. 177, N. 2.}$$

$$23) \int \sin qx \cdot \cos px \frac{dx}{x\sqrt{x}} = \{\sqrt{p+q} + \sqrt{q-p}\} \sqrt{\frac{\pi}{2}}[q>p], = \sqrt{q\pi}[q=p], = \\ = \{\sqrt{q+p} - \sqrt{p-q}\} \sqrt{\frac{\pi}{2}}[q<p] \text{ V. T. 177, N. 10.}$$

$$24) \int \sin px \frac{dx}{\sqrt[p]{x^{q-1}}} = \frac{1}{\sqrt[p]{p}} \Gamma\left(\frac{1}{q}\right) \sin \frac{\pi}{2q} \text{ V. T. 150, N. 1.}$$

$$25) \int \cos px \frac{dx}{\sqrt[p]{x^{q-1}}} = \frac{1}{\sqrt[p]{p}} \Gamma\left(\frac{1}{q}\right) \cos \frac{\pi}{2q} \text{ V. T. 150, N. 2.}$$

$$26) \int \sin px \frac{dx}{(q+rx)\sqrt{x}} = \frac{-\pi}{\sqrt{qr}} \sin \frac{pq}{r} + \frac{1}{q} \sqrt{\frac{\pi}{r}} \cdot \sum_1^{\infty} \frac{1}{1^{n/2}} \sin\left(\frac{2n-1}{4}\pi\right) \cdot \left(\frac{2pq}{r}\right)^n \text{ (IV, 312).}$$

$$27) \int \cos px \frac{dx}{(q+rx)\sqrt{x}} = \frac{\pi}{\sqrt{qr}} \cos \frac{pq}{r} + \frac{1}{q} \sqrt{\frac{\pi}{r}} \cdot \sum_1^{\infty} \frac{(-1)^n}{1^{n/2}} \cos\left(\frac{2n-1}{4}\pi\right) \cdot \left(\frac{2pq}{r}\right)^n \text{ (IV, 312).}$$

$$28) \int \cos(2\sqrt{px}) \cdot (1-x)^{q-1} \frac{dx}{\sqrt{x}} = B\left(\frac{1}{2}, q\right) \sum_0^{\infty} \frac{(-1)^n}{1^{n/2}} \frac{p^n}{(q+\frac{1}{2})^{n/2}} \text{ (VIII, 514).}$$

$$29) \int \cos\left(\frac{\pi}{4}-px\right) \frac{dx\sqrt{x}}{q^2+x^2} = \frac{\pi}{2\sqrt{q}} e^{-pq} \text{ Liouville, V. T. 160, N. 21.}$$

F. Alg. irrat. fract.;

Circ. Dir. en num. polyn.; Circ. de x .

TABLE 178.

Lim. 0 et ∞ .

$$1) \int (\sin^2 qx - \sin^2 px) \frac{dx}{\sqrt{x}} = \frac{1}{4} \left(\sqrt{\frac{\pi}{p}} - \sqrt{\frac{\pi}{q}} \right) \text{ (IV, 310).}$$

$$2) \int (\sin^4 qx - \sin^4 px) \frac{dx}{\sqrt{x}} = \frac{1}{32} (8 - \sqrt{2}) \left(\sqrt{\frac{\pi}{p}} - \sqrt{\frac{\pi}{q}} \right) \text{ V. T. 177, N. 2.}$$

$$3) \int (\cos^2 qx - \sin^2 px) \frac{dx}{\sqrt{x}} = \frac{1}{4} \left(\sqrt{\frac{\pi}{p}} + \sqrt{\frac{\pi}{q}} \right) \text{ V. T. 177, N. 2 et T. 178, N. 1.}$$

$$4) \int (\cos^4 qx - \sin^4 px) \frac{dx}{\sqrt{x}} = \frac{1}{4} \left(\sqrt{\frac{\pi}{q}} + \sqrt{\frac{\pi}{p}} \right) + \frac{1}{16} \left(\sqrt{\frac{\pi}{2q}} - \sqrt{\frac{\pi}{2p}} \right) \\ \text{V. T. 177, N. 2 et T. 178, N. 2.}$$

$$5) \int (\cos^2 qx - \cos^2 px) \frac{dx}{\sqrt{x}} = \frac{1}{4} \left(\sqrt{\frac{\pi}{q}} - \sqrt{\frac{\pi}{p}} \right) \text{ V. T. 178, N. 1.}$$

F. Alg. irrat. fract.;

Circ. Dir. en num. polyn.; Circ. de x . TABLE 178, suite.

Lim. 0 et ∞ .

$$6) \int (\cos^2 qx - \cos^2 px) \frac{dx}{\sqrt{x}} = \frac{1}{32} (8 + \sqrt{2}) \left(\sqrt{\frac{\pi}{q}} - \sqrt{\frac{\pi}{p}} \right) \text{ V. T. 177, N. 2 et T. 178, N. 2.}$$

$$7) \int \{ \sin(q-x) + \cos(q-x) \} \frac{dx}{\sqrt{x}} = \sin q \cdot \sqrt{2\pi} \text{ (IV, 311).}$$

$$8) \int (\sin x - x \cos x) \frac{dx}{x^2 \sqrt{x}} = \frac{1}{3} \sqrt{2\pi} \text{ (IV, 311).}$$

$$9) \int \{ \cos(px \sqrt{a}) + \sin(px \sqrt{a}) \} \left(\frac{\sin x}{x} \right)^a \frac{dx}{\sqrt{x}} = \frac{\sqrt{2\pi}}{1^{a/2}} \sum_0^a (-1)^n \binom{a}{n} (a + p \sqrt{a} - 2n)^{a-1/2}$$

$$10) \int \{ \cos(px \sqrt{a}) - \sin(px \sqrt{a}) \} \left(\frac{\sin x}{x} \right)^a \frac{dx}{\sqrt{x}} = \frac{\sqrt{2\pi}}{1^{a/2}} \sum_0^a (-1)^n \binom{a}{n} (a - p \sqrt{a} - 2n)^{a-1/2}$$

Dans 9) et 10) on a $0 \leq 2a < 4p + 1$ (IV, 311).

$$11) \int (\cos px - \sin px) \frac{dx}{(q^2 + x^2) \sqrt{x}} = \frac{\pi}{4q} e^{-pq} \sqrt{\frac{2}{q}} \text{ (IV, 312).}$$

$$12) \int (\cos px - \sin px) \frac{dx \sqrt{x}}{q^2 + x^2} = \frac{\pi}{\sqrt{2}q} e^{-pq} \text{ V. T. 178, N. 11.}$$

$$13) \int (\cos px - \sin px) \frac{x dx \sqrt{x}}{q^2 + x^2} = -\pi e^{-pq} \sqrt{\frac{q}{2}} \text{ (IV, 313).}$$

$$14) \int (\cos px - \sin px) \frac{dx \sqrt{x}}{(q^2 + x^2)^2} = \left(p + \frac{1}{2q} \right) e^{-pq} \frac{\pi}{2q \sqrt{2}q} \text{ (IV, 313).}$$

$$15) \int (\cos px - \sin px) \frac{x dx \sqrt{x}}{(q^2 + x^2)^2} = \left(\frac{1}{2q} - p \right) e^{-pq} \frac{\pi}{2 \sqrt{2}q} \text{ (IV, 313).}$$

F. Alg. irrat. fract.;

Circ. Dir. en num.; Circ. de $x^a \pm x^{-a}$. TABLE 179.

Lim. 0 et ∞ .

$$1) \int \sin \left\{ p \left(x - \frac{1}{x} \right) \right\} \frac{dx}{\sqrt{x}} = e^{-1/p} \sqrt{\frac{\pi}{2p}} = \quad 2) \int \cos \left\{ p \left(x - \frac{1}{x} \right) \right\} \frac{dx}{\sqrt{x}} \text{ (VIII, 446).}$$

$$3) \int \frac{x-1}{x} \sin \left\{ p \left(x - \frac{1}{x} \right) \right\} \frac{dx}{\sqrt{x}} = 0 = \quad 4) \int \frac{x+1}{x} \cos \left\{ p \left(x - \frac{1}{x} \right) \right\} \frac{dx}{\sqrt{x}} \text{ (VIII, 446).}$$

$$5) \int \sin \left(p^2 x + \frac{q^2}{x} \right) \frac{dx}{\sqrt{x}} = (\cos 2pq + \sin 2pq) \frac{1}{2p} \sqrt{2\pi} \text{ (VIII, 428).}$$

$$6) \int \sin \left(p^2 x + \frac{q^2}{x} \right) \frac{dx}{x \sqrt{x}} = (\cos 2pq - \sin 2pq) \frac{1}{2q} \sqrt{2\pi} \text{ (VIII, 428).}$$

F. Alg. irrat. fract.;

Circ. Dir. en num.; Circ. de $x^a \pm x^{-a}$. TABLE 179, suite.

Lim. 0 et ∞ .

$$7) \int \cos \left(p^2 x + \frac{q^2}{x} \right) \frac{dx}{\sqrt{x}} = (\cos 2pq - \sin 2pq) \frac{1}{2p} \sqrt{2\pi} \text{ (VIII, 428).}$$

$$8) \int \cos \left(p^2 x + \frac{q^2}{x} \right) \frac{dx}{x\sqrt{x}} = (\cos 2pq - \sin 2pq) \frac{1}{2q} \sqrt{2\pi} \text{ (VIII, 428).}$$

$$9) \int \left(x - \frac{1}{x} \right) \sin \left\{ p \left(x^2 - \frac{1}{x^2} \right) \right\} \frac{dx}{x} = 0 = 10) \int \left(x + \frac{1}{x} \right) \cos \left\{ p \left(x^2 - \frac{1}{x^2} \right) \right\} \frac{dx}{x} \text{ V. T. 179, N. 3, 4.}$$

$$11) \int \sin \left\{ \frac{(px - q)^2}{x} \right\} \frac{dx}{\sqrt{x}} = \frac{1}{2p} \sqrt{2\pi} =$$

$$12) \int \cos \left\{ \frac{(px - q)^2}{x} \right\} \frac{dx}{\sqrt{x}} \text{ (VIII, 428).}$$

$$13) \int \sin \left\{ \frac{(px - q)^2}{x} \right\} \frac{dx}{x\sqrt{x}} = \frac{1}{2q} \sqrt{2\pi} =$$

$$14) \int \cos \left\{ \frac{(px - q)^2}{x} \right\} \frac{dx}{x\sqrt{x}} \text{ (VIII, 428).}$$

$$15) \int \sin \left\{ p \left(x - \frac{1}{x} \right) \right\} \frac{3+x}{(1+x^2)^2} x^2 dx \sqrt{x} = e^{-1/p} \sqrt{2p\pi} \text{ (IV, 318).}$$

$$16) \int \cos \left\{ p \left(x - \frac{1}{x} \right) \right\} \frac{3-x}{(1+x^2)^2} x^2 dx \sqrt{x} = e^{-1/p} \sqrt{2p\pi} \text{ (IV, 318).}$$

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. en dén. monôme. TABLE 180.

Lim. 0 et ∞ .

$$1) \int \sin \{ (sr+1)x \} \cdot \sin sr x \frac{dx}{x \sin rx} = \frac{1}{2} s\pi = 2) \int \sin \{ (sr-1)x \} \cdot \sin sr x \frac{dx}{x \sin rx} \text{ (H, 28).}$$

$$3) \int \sin^2 sr x \frac{dx}{x \sin rx} = s\pi =$$

$$4) \int \sin^2 sr x \frac{\cos x dx}{x \sin rx} \text{ (H, 29).}$$

$$5) \int \sin 2sr x \frac{\sin x dx}{x \sin rx} = 0 \text{ (H, 29). } 6) \int \sin (p \text{ Tang } 2x) \frac{\text{Tg } x dx}{x \text{ Tg } 2x} = \frac{\pi}{2} (1 - e^{-p}) \text{ (VIII, 388).}$$

$$7) \int \sqrt[2]{\sin x \cdot \cos x} \frac{dx}{x \cos^2 x} = \sqrt[2]{4} \cdot \sqrt[2]{27} \cdot F \left(\sin \frac{\pi}{12} \right) \text{ (VIII, 388).}$$

$$8) \int \frac{\sin x}{\sqrt[2]{\cos x}} \frac{dx}{x} = \sqrt[2]{27} \cdot F \left(\sin \frac{\pi}{12} \right) - \frac{3+3\sqrt{3}}{2\sqrt[2]{8}} F \left(\sin \frac{\pi}{12} \right) \text{ (VIII, 388).}$$

$$9) \int \sqrt[2]{\sin x} \frac{dx}{x \cos x} = \sqrt[2]{27} \cdot F \left(\sin \frac{\pi}{12} \right) =$$

$$10) \int \frac{\sin x}{\sqrt[2]{\cos^2 x}} \frac{dx}{x} \text{ (VIII, 388).}$$

$$11) \int \frac{\text{Tg } x}{\sqrt[2]{\cos^2 x}} \frac{dx}{x} = \sqrt[2]{27} \cdot F \left(\sin \frac{\pi}{12} \right) =$$

$$12) \int \frac{\text{Tg } x}{\sqrt[2]{\cos^2 2x}} \frac{dx}{x} \text{ (VIII, 388).}$$

$$13) \int \sin^2 sr x \cdot \sin x \frac{dx}{x^2 \sin rx} = \frac{1}{2} s\pi =$$

$$14) \int \sin^2 sr x \cdot \sin^2 x \frac{dx}{x^2 \sin rx} \text{ (H, 29).}$$

$$15) \int \frac{\cos \{(2a-1)x\}}{\cos x} \left(\frac{\sin x}{x}\right)^{2a} dx = (-1)^{a-1} \frac{2^{2a}-1}{1^{2a/1}} 2^{2a-1} \pi B_{2a-1}$$

Hamilton, L. & E. Phil. Mag. 23, 360.

$$16) \int \frac{\cos 2ax}{\cos x} \sin^{2a} x \frac{dx}{x^b} = 0 =$$

$$17) \int \frac{\cos 2ax}{\cos x} \sin^{2a+1} x \frac{dx}{x^b}$$

$$18) \int \frac{\sin \{(2a-1)x\}}{\cos x} \sin^{2a+1} x \frac{dx}{x^b} = (-1)^{\frac{a-b-1}{2}} \frac{\pi}{2^{2a} 1^{b-1/1}} = 19) 2 \int \frac{\cos 2ax}{\cos x} \sin^{2a+2} x \frac{dx}{x^b}$$

$$20) \int \frac{\cos 2ax}{\cos x} \sin^{2a+p+1} x \frac{dx}{x^b} = (-1)^{\frac{a-b-1}{2}} \frac{\pi}{2^{2a+p} 1^{b-1/1}} p^{b-1} [p < 1]$$

Dans 16) à 20) on a $a > b$. Bronwin, L. & E. Phil. Mag. 24, 491.

$$1) \int \frac{\sin x}{p \pm q \cos 2x} \frac{dx}{x} = \frac{\pi}{2 \sqrt{p^2 - q^2}} [p^2 > q^2], = 0 [p^2 < q^2] \text{ (VIII, 386).}$$

$$2) \int \frac{\tan x}{p \pm q \cos 2x} \frac{dx}{x} = \frac{\pi}{2 \sqrt{p^2 - q^2}} [p^2 > q^2], = 0 [p^2 < q^2] \text{ (VIII, 386).}$$

$$3) \int \frac{Tg x}{p \pm q \cos 4x} \frac{dx}{x} = \frac{\pi}{2 \sqrt{p^2 - q^2}} [p^2 > q^2], = 0 [p^2 < q^2] \text{ (VIII, 386).}$$

$$4) \int \frac{\sin x}{p^2 + Tg^2 x} \frac{dx}{x} = \frac{\pi}{2p(1+p)} =$$

$$5) \int \frac{Tg x}{p^2 + Tg^2 x} \frac{dx}{x} \text{ (VIII, 389).}$$

$$6) \int \frac{Tg x}{p^2 + Tg^2 2x} \frac{dx}{x} = \frac{\pi}{2p(1+p)} \text{ (VIII, 389*)}$$

$$7) \int \frac{Tg^2 x}{p^2 + Tg^2 x} \frac{dx}{x} = \frac{\pi}{2} \frac{1}{1+p} \text{ (VIII, 389).}$$

$$8) \int \frac{\sin x}{p^2 \sin^2 x + q^2 \cos^2 x} \frac{dx}{x} = \frac{\pi}{2pq} =$$

$$9) \int \frac{Tg x}{p^2 \sin^2 x + q^2 \cos^2 x} \frac{dx}{x} \text{ (VIII, 390).}$$

$$10) \int \frac{Tg x}{p^2 \sin^2 2x + q^2 \cos^2 2x} \frac{dx}{x} = \frac{\pi}{2pq} \text{ (VIII, 390*)}$$

$$11) \int \frac{\sin^2 x}{p^2 \sin^2 x + q^2 \cos^2 x} \frac{dx}{x} = \frac{\pi}{2p(p+q)} \text{ (VIII, 390).}$$

$$12) \int \frac{\sin x}{(p^2 \sin^2 x + q^2 \cos^2 x)^2} \frac{dx}{x} = \frac{\pi}{4} \frac{p^2 + q^2}{p^2 q^2} = 13) \int \frac{Tg x}{(p^2 \sin^2 x + q^2 \cos^2 x)^2} \frac{dx}{x} \text{ (VIII, 390).}$$

$$14) \int \frac{Tg x}{(p^2 \sin^2 2x + q^2 \cos^2 2x)^2} \frac{dx}{x} = \frac{\pi}{4} \frac{p^2 + q^2}{p^2 q^2} \text{ (VIII, 390*)}$$

$$15) \int \frac{\sin^2 x}{(p^2 \sin^2 x + q^2 \cos^2 x)^2} \frac{dx}{x} = \frac{\pi}{4p^2 q} \text{ (VIII, 390).}$$

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. en dén. bin. rat. et un fact. au num.

TABLE 181, suite.

Lim. 0 et ∞ .

$$16) \int \frac{\sin x}{(p^2 \sin^2 x + q^2 \cos^2 x)^2} \frac{dx}{x} = \frac{\pi}{16} \frac{3p^4 + 2p^2 q^2 + 3q^4}{p^4 q^4} \text{ (VIII, 391).}$$

$$17) \int \frac{\operatorname{Tg} x}{(p^2 \sin^2 x + q^2 \cos^2 x)^2} \frac{dx}{x} = \frac{\pi}{16} \frac{3p^4 + 2p^2 q^2 + 3q^4}{p^4 q^4} \text{ (VIII, 391).}$$

$$18) \int \frac{\operatorname{Tg} x}{(p^2 \sin^2 2x + q^2 \cos^2 2x)^2} \frac{dx}{x} = \frac{\pi}{16} \frac{3p^4 + 2p^2 q^2 + 3q^4}{p^4 q^4} \text{ (VIII, 391).}$$

$$19) \int \frac{\sin^2 x}{(p^2 \sin^2 x + q^2 \cos^2 x)^2} \frac{dx}{x} = \frac{\pi}{16} \frac{p^2 + 3q^2}{p^2 q^2} \text{ (VIII, 390).}$$

$$20) \int \frac{\sin x}{(p^2 \sin^2 x + q^2 \cos^2 x)^4} \frac{dx}{x} = \frac{\pi}{32} \frac{5p^6 + 3p^4 q^2 + 3p^2 q^4 + 5q^6}{p^4 q^4} \text{ (VIII, 391).}$$

$$21) \int \frac{\operatorname{Tg} x}{(p^2 \sin^2 x + q^2 \cos^2 x)^4} \frac{dx}{x} = \frac{\pi}{32} \frac{5p^6 + 3p^4 q^2 + 3p^2 q^4 + 5q^6}{p^4 q^4} \text{ (VIII, 391).}$$

$$22) \int \frac{\operatorname{Tg} x}{(p^2 \sin^2 2x + q^2 \cos^2 2x)^4} \frac{dx}{x} = \frac{\pi}{32} \frac{5p^6 + 3p^4 q^2 + 3p^2 q^4 + 5q^6}{p^4 q^4} \text{ (VIII, 391).}$$

$$23) \int \frac{\sin^2 x}{(p^2 \sin^2 x + q^2 \cos^2 x)^4} \frac{dx}{x} = \frac{\pi}{32} \frac{p^4 + p^2 q^2 + 5q^4}{p^4 q^4} \text{ (VIII, 391).}$$

$$24) \int \frac{\sin^4 x}{(p^2 \sin^2 x + q^2 \cos^2 x)^4} \frac{dx}{x} = \frac{\pi}{32} \frac{p^2 + 5q^2}{p^4 q^4} \text{ (VIII, 391).}$$

$$25) \int \frac{\sin x}{(1 + \sin \lambda \cdot \cos 2x)^{a+1}} \frac{dx}{x} = \frac{1^{a/2}}{1^{a/2}} \frac{\pi}{2} \sum_0^{\infty} (-1)^n \frac{(n+1)^{n/2}}{(2a-1)^{n/2-1}} \binom{a}{2n} \frac{1}{2^n} \sec^{2(a-n)+1} \lambda \text{ (VIII, 386).}$$

$$26) \int \frac{\operatorname{Tg} x}{(1 + \sin \lambda \cdot \cos 2x)^{a+1}} \frac{dx}{x} = \frac{1^{a/2}}{1^{a/2}} \frac{\pi}{2} \sum_0^{\infty} (-1)^n \frac{(n+1)^{n/2}}{(2a-1)^{n/2-1}} \binom{a}{2n} \frac{1}{2^n} \sec^{2(a-n)+1} \lambda \text{ (VIII, 386).}$$

$$27) \int \frac{\operatorname{Tg} x}{(1 + \sin \lambda \cdot \cos 4x)^{a+1}} \frac{dx}{x} = \frac{1^{a/2}}{1^{a/2}} \frac{\pi}{2} \sum_0^{\infty} (-1)^n \frac{(n+1)^{n/2}}{(2a-1)^{n/2-1}} \binom{a}{2n} \frac{1}{2^n} \sec^{2(a-n)+1} \lambda \text{ (VIII, 386).}$$

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. en dén. bin. rat. et plus. fact. au num.

TABLE 182.

Lim. 0 et ∞ .

$$1) \int \frac{\sin x \cdot \operatorname{Tg}^2 x}{p^2 + \operatorname{Tg}^2 x} \frac{dx}{x} = \frac{\pi}{2} \frac{1}{1+p} =$$

$$2) \int \frac{\operatorname{Tg}^2 2x \cdot \operatorname{Tg} x}{p^2 + \operatorname{Tg}^2 2x} \frac{dx}{x} \text{ (VIII, 389*).}$$

$$3) \int \frac{\sin x \cdot \cos x}{p^2 \sin^2 x + q^2 \cos^2 x} \frac{dx}{x} = \frac{\pi}{2q(p+q)} =$$

$$4) \int \frac{\sin x \cdot \cos^2 x}{p^2 \sin^2 x + q^2 \cos^2 x} \frac{dx}{x} \text{ (VIII, 390).}$$

$$5) \int \frac{Tg x \cdot \cos^2 2x}{p^2 \sin^2 2x + q^2 \cos^2 2x} \frac{dx}{x} = \frac{\pi}{2q(p+q)} \quad (\text{VIII, 390}^*).$$

$$6) \int \frac{\sin^2 x \cdot Tg x}{p^2 \sin^2 x + q^2 \cos^2 x} \frac{dx}{x} = \frac{\pi}{2p(p+q)} = 7) 4 \int \frac{\sin^2 x \cdot \cos x}{p^2 \sin^2 2x + q^2 \cos^2 2x} \frac{dx}{x} \quad (\text{VIII, 390}).$$

$$8) \int \frac{\sin x \cdot \cos x}{(p^2 \sin^2 x + q^2 \cos^2 x)^2} \frac{dx}{x} = \frac{\pi}{4pq^3} = 9) \int \frac{\sin x \cdot \cos^3 x}{(p^2 \sin^2 x + q^2 \cos^2 x)^3} \frac{dx}{x} \quad (\text{VIII, 390}).$$

$$10) \int \frac{Tg x \cdot \cos^2 2x}{(p^2 \sin^2 2x + q^2 \cos^2 2x)^2} \frac{dx}{x} = \frac{\pi}{4pq^3} \quad (\text{VIII, 390}^*).$$

$$11) \int \frac{\sin^2 x \cdot Tg x}{(p^2 \sin^2 x + q^2 \cos^2 x)^2} \frac{dx}{x} = \frac{\pi}{4p^3q} = 12) 4 \int \frac{\sin^2 x \cdot \cos x}{(p^2 \sin^2 2x + q^2 \cos^2 2x)^2} \frac{dx}{x} \quad (\text{VIII, 390}).$$

$$13) \int \frac{\sin x \cdot \cos x}{(p^2 \sin^2 x + q^2 \cos^2 x)^3} \frac{dx}{x} = \frac{\pi}{16} \frac{3p^3 + q^3}{p^3q^3} = 14) \int \frac{\sin x \cdot \cos^3 x}{(p^2 \sin^2 x + q^2 \cos^2 x)^3} \frac{dx}{x} \quad (\text{VIII, 391}).$$

$$15) \int \frac{Tg x \cdot \cos^2 2x}{(p^2 \sin^2 2x + q^2 \cos^2 2x)^3} \frac{dx}{x} = \frac{\pi}{16} \frac{3p^3 + q^3}{p^3q^3} \quad (\text{VIII, 391}^*).$$

$$16) \int \frac{\sin^2 x \cdot Tg x}{(p^2 \sin^2 x + q^2 \cos^2 x)^3} \frac{dx}{x} = \frac{\pi}{16} \frac{p^3 + 3q^3}{p^3q^3} = 17) 4 \int \frac{\sin^2 x \cdot \cos x}{(p^2 \sin^2 2x + q^2 \cos^2 2x)^3} \frac{dx}{x} \quad (\text{VIII, 391}).$$

$$18) \int \frac{\sin x \cdot \cos x}{(p^2 \sin^2 x + q^2 \cos^2 x)^4} \frac{dx}{x} = \frac{\pi}{32} \frac{5p^4 + 2p^2q^2 + q^4}{p^4q^4} = 19) \int \frac{\sin x \cdot \cos^3 x}{(p^2 \sin^2 x + q^2 \cos^2 x)^4} \frac{dx}{x} \quad (\text{VIII, 391}).$$

$$20) \int \frac{Tg x \cdot \cos^2 2x}{(p^2 \sin^2 2x + q^2 \cos^2 2x)^4} \frac{dx}{x} = \frac{\pi}{32} \frac{5p^4 + 2p^2q^2 + q^4}{p^4q^4} \quad (\text{VIII, 391}^*).$$

$$21) \int \frac{\sin^2 x \cdot Tg x}{(p^2 \sin^2 x + q^2 \cos^2 x)^4} \frac{dx}{x} = \frac{\pi}{32} \frac{p^4 + 2p^2q^2 + 5q^4}{p^4q^4} = 22) 4 \int \frac{\sin^2 x \cdot \cos x}{(p^2 \sin^2 2x + q^2 \cos^2 2x)^4} \frac{dx}{x} \quad (\text{VIII, 391}).$$

$$23) \int \frac{\sin x \cdot \cos^3 x}{(p^2 \sin^2 x + q^2 \cos^2 x)^4} \frac{dx}{x} = \frac{\pi}{32} \frac{5p^3 + q^3}{p^3q^3} = 24) \int \frac{\sin x \cdot \cos^4 x}{(p^2 \sin^2 x + q^2 \cos^2 x)^4} \frac{dx}{x} \quad (\text{VIII, 392}).$$

$$25) \int \frac{Tg x \cdot \cos^4 2x}{(p^2 \sin^2 2x + q^2 \cos^2 2x)^4} \frac{dx}{x} = \frac{\pi}{32} \frac{5p^3 + q^3}{p^3q^3} \quad (\text{VIII, 392}).$$

$$26) \int \frac{\sin^2 x \cdot \cos x}{(p^2 \sin^2 x + q^2 \cos^2 x)^4} \frac{dx}{x} = \frac{\pi}{32} \frac{p^3 + q^3}{p^3q^3} = 27) \int \frac{\sin^2 x \cdot \cos^3 x}{(p^2 \sin^2 x + q^2 \cos^2 x)^4} \frac{dx}{x} \quad (\text{VIII, 391}).$$

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. en dén. bin. rat. et plus. fact. au num. TABLE 182, suite.

Lim. 0 et ∞.

$$28) \int \frac{Tgx \cdot \sin^2 4x}{(p^2 \sin^2 2x + q^2 \cos^2 2x)^2} \frac{dx}{x} = \frac{\pi}{8} \frac{p^2 + q^2}{p^2 q^2} \text{ (VIII, 391*)}.$$

$$29) \int \frac{\sin^4 x \cdot Tgx}{(p^2 \sin^2 x + q^2 \cos^2 x)^2} \frac{dx}{x} = \frac{\pi}{32} \frac{p^2 + 5q^2}{p^2 q^2} =$$

$$30) 16 \int \frac{\sin^2 x \cdot \cos^2 x}{(p^2 \sin^2 2x + q^2 \cos^2 2x)^2} \frac{dx}{x} \text{ (VIII, 391)}.$$

$$31) \int \frac{\cos^{2a} x \cdot \cos 2ax \cdot \sin x}{p^2 \sin^2 x + \cos^2 x} \frac{dx}{x} = \frac{\pi}{2} \frac{p^{2a-1}}{(1+p)^{2a}} = 32) \int \frac{\cos^{2a-1} x \cdot \cos 2ax \cdot \sin x}{p^2 \sin^2 x + \cos^2 x} \frac{dx}{x} \text{ (VIII, 386)}.$$

$$33) \int \frac{\cos^{2a} 2x \cdot \cos 4ax \cdot Tgx}{p^2 \sin^2 2x + \cos^2 2x} \frac{dx}{x} = \frac{\pi}{2} \frac{p^{2a-1}}{(1+p)^{2a}} \text{ (VIII, 386)}.$$

$$34) \int \frac{\cos^a 2x \cdot \sin x}{(1 + \sin \lambda \cdot \cos 2x)^{a+1}} \frac{dx}{x} = \frac{1^{a/2}}{1^{a/2}} \frac{\pi}{2} \frac{(-1)^a}{\sin^{a+1} \lambda} \sum_{n=0}^{\infty} (-1)^n \frac{(n+1)^{n/2}}{(2a-1)^{n/2-1}} \binom{a}{2n} \frac{1}{2^n} Tg^{2(a-n)+1} \lambda \text{ (VIII, 386)}.$$

$$35) \int \frac{\cos^a 2x \cdot Tgx}{(1 + \sin \lambda \cdot \cos 2x)^{a+1}} \frac{dx}{x} = \frac{1^{a/2}}{1^{a/2}} \frac{\pi}{2} \frac{(-1)^a}{\sin^{a+1} \lambda} \sum_{n=0}^{\infty} (-1)^n \frac{(n+1)^{n/2}}{(2a-1)^{n/2-1}} \binom{a}{2n} \frac{1}{2^n} Tg^{2(a-n)+1} \lambda \text{ (VIII, 386)}.$$

$$36) \int \frac{\cos^a 4x \cdot Tgx}{(1 + \sin \lambda \cdot \cos 4x)^{a+1}} \frac{dx}{x} = \frac{1^{a/2}}{1^{a/2}} \frac{\pi}{2} \frac{(-1)^a}{\sin^{a+1} \lambda} \sum_{n=0}^{\infty} (-1)^n \frac{(n+1)^{n/2}}{(2a-1)^{n/2-1}} \binom{a}{2n} \frac{1}{2^n} Tg^{2(a-n)+1} \lambda \text{ (VIII, 386)}.$$

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. en dén. bin. irr. et un fact. au num. TABLE 183.

Lim. 0 et ∞.

$$1) \int \frac{\sin x}{\sqrt{p \pm q \cos 4x}} \frac{dx}{x} = \frac{1}{\sqrt{p+q}} F\left(\sqrt{\frac{2q}{p+q}}\right) = 2) \int \frac{Tgx}{\sqrt{p \pm q \cos 4x}} \frac{dx}{x} \text{ (VIII, 388)}.$$

$$3) \int \frac{Tgx}{\sqrt{p \pm q \cos 8x}} \frac{dx}{x} = \frac{1}{\sqrt{p+q}} F\left(\sqrt{\frac{2q}{p+q}}\right) \text{ (VIII, 389)}.$$

$$4) \int \frac{\sin x}{\sqrt{1 + \sin^2 x}} \frac{dx}{x} = \sqrt{\frac{1}{2}} \cdot F\left(\sin \frac{\pi}{4}\right) =$$

$$5) \int \frac{Tgx}{\sqrt{1 + \sin^2 x}} \frac{dx}{x} \text{ (VIII, 396)}.$$

$$6) \int \frac{Tgx}{\sqrt{1 + \sin^2 2x}} \frac{dx}{x} = \sqrt{\frac{1}{2}} \cdot F\left(\sin \frac{\pi}{4}\right) \text{ (VIII, 396*)}.$$

$$7) \int \frac{\sin^3 x}{\sqrt{1 + \sin^2 x}} \frac{dx}{x} = \sqrt{2} \cdot E\left(\sin \frac{\pi}{4}\right) - \sqrt{\frac{1}{2}} \cdot F\left(\sin \frac{\pi}{4}\right) \text{ (VIII, 396)}.$$

$$8) \int \frac{\sin^3 x}{\sqrt{1 + \cos^2 x}} \frac{dx}{x} = \sqrt{2} \cdot \left\{ F\left(\sin \frac{\pi}{4}\right) - E\left(\sin \frac{\pi}{4}\right) \right\} \text{ (VIII, 396)}.$$

$$9) \int \frac{\sin x}{\sqrt{1 + \cos^2 x}} \frac{dx}{x} = \sqrt{\frac{1}{2}} \cdot F\left(\sin \frac{\pi}{4}\right) =$$

$$10) \int \frac{Tgx}{\sqrt{1 + \cos^2 x}} \frac{dx}{x} \text{ (VIII, 396)}.$$

$$11) \int \frac{Tg x}{\sqrt{1 + \cos^2 2x}} \frac{dx}{x} = \sqrt{\frac{1}{2}} \cdot F\left(\sin \frac{\pi}{4}\right) \text{ (VIII, 396*)}.$$

$$12) \int \frac{\sin x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = F'(p) =$$

$$13) \int \frac{Tg x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} \text{ (VIII, 393).}$$

$$14) \int \frac{Tg x}{\sqrt{1 - p^2 \sin^2 2x}} \frac{dx}{x} = F'(p) \text{ (VIII, 393).}$$

$$15) \int \frac{\sin^2 x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{p^2} \{F'(p) - E'(p)\} \text{ (VIII, 393).}$$

$$16) \int \frac{\sin^4 x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = \frac{2 + p^2}{3p^4} F'(p) - 2 \frac{1 + p^2}{3p^4} E'(p) \text{ (VIII, 394).}$$

$$17) \int \frac{\sin x}{\sqrt{1 - p^2 \sin^2 x^3}} \frac{dx}{x} = \frac{1}{1 - p^2} E'(p) =$$

$$18) \int \frac{Tg x}{\sqrt{1 - p^2 \sin^2 x^3}} \frac{dx}{x} \text{ (VIII, 395).}$$

$$19) \int \frac{Tg x}{\sqrt{1 - p^2 \sin^2 2x^3}} \frac{dx}{x} = \frac{1}{1 - p^2} E'(p) \text{ (VIII, 395*)}.$$

$$20) \int \frac{\sin^2 x}{\sqrt{1 - p^2 \sin^2 x^3}} \frac{dx}{x} = \frac{1}{p^2(1 - p^2)} E'(p) - \frac{1}{p^2} F'(p) \text{ (VIII, 395).}$$

$$21) \int \frac{\sin x}{\sqrt{1 - p^2 \cos^2 x}} \frac{dx}{x} = F'(p) =$$

$$22) \int \frac{Tg x}{\sqrt{1 - p^2 \cos^2 x}} \frac{dx}{x} \text{ (VIII, 394).}$$

$$23) \int \frac{Tg x}{\sqrt{1 - p^2 \cos^2 2x}} \frac{dx}{x} = F'(p) \text{ (VIII, 394).}$$

$$24) \int \frac{\sin^2 x}{\sqrt{1 - p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{p^2} \{E'(p) - (1 - p^2) F'(p)\} \text{ (VIII, 394).}$$

$$25) \int \frac{\sin^4 x}{\sqrt{1 - p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{3p^4} \{2(2p^2 - 1)E'(p) + (2 + 3p^2)(1 - p^2)F'(p)\} \text{ (VIII, 395).}$$

$$26) \int \frac{\sin x}{\sqrt{1 - p^2 \cos^2 x^3}} \frac{dx}{x} = \frac{1}{1 - p^2} E'(p) =$$

$$27) \int \frac{Tg x}{\sqrt{1 - p^2 \cos^2 x^3}} \frac{dx}{x} \text{ (VIII, 395).}$$

$$28) \int \frac{Tg x}{\sqrt{1 - p^2 \cos^2 2x^3}} \frac{dx}{x} = \frac{1}{1 - p^2} E'(p) \text{ (VIII, 395*)}.$$

$$29) \int \frac{\sin^2 x}{\sqrt{1 - p^2 \cos^2 x^3}} \frac{dx}{x} = \frac{1}{p^2} \{F'(p) - E'(p)\} \text{ (VIII, 395).}$$

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. en dén. bin. irr. et plus. fact. au num. avec Tgx .

TABLE 184.

Lim. 0 et ∞ .

- 1) $\int \frac{Tgx \cdot \cos 4x}{\sqrt{p+q} \cos 4x} \frac{dx}{x} = \frac{1}{q} \left\{ \sqrt{p+q} \cdot E' \left(\sqrt{\frac{2q}{p+q}} \right) - \frac{p}{\sqrt{p+q}} F' \left(\sqrt{\frac{2q}{p+q}} \right) \right\}$ (VIII, 389).
- 2) $\int \frac{Tgx \cdot \cos 8x}{\sqrt{p+q} \cos 8x} \frac{dx}{x} = \frac{1}{q} \left\{ \sqrt{p+q} \cdot E' \left(\sqrt{\frac{2q}{p+q}} \right) - \frac{p}{\sqrt{p+q}} F' \left(\sqrt{\frac{2q}{p+q}} \right) \right\}$ (VIII, 389).
- 3) $\int \frac{Tgx \cdot \cos 4x}{\sqrt{p-q} \cos 4x} \frac{dx}{x} = \frac{1}{q} \left\{ \frac{p}{\sqrt{p+q}} F' \left(\sqrt{\frac{2q}{p+q}} \right) - \sqrt{p+q} \cdot E' \left(\sqrt{\frac{2q}{p+q}} \right) \right\}$ (VIII, 389).
- 4) $\int \frac{Tgx \cdot \cos 8x}{\sqrt{p-q} \cos 8x} \frac{dx}{x} = \frac{1}{q} \left\{ \frac{p}{\sqrt{p+q}} F' \left(\sqrt{\frac{2q}{p+q}} \right) - \sqrt{p+q} \cdot E' \left(\sqrt{\frac{2q}{p+q}} \right) \right\}$ (VIII, 389).
- 5) $\int \frac{\sin^2 x \cdot Tgx}{\sqrt{1+\sin^2 x}} \frac{dx}{x} = \sqrt{2} \cdot E' \left(\sin \frac{\pi}{4} \right) - \sqrt{\frac{1}{2}} \cdot F' \left(\sin \frac{\pi}{4} \right) =$
- 6) $\int \frac{Tgx \cdot \cos^2 2x}{\sqrt{1+\cos^2 2x}} \frac{dx}{x}$ (VIII, 396).
- 7) $\int \frac{Tgx \cdot \cos^2 2x}{\sqrt{1+\sin^2 2x}} \frac{dx}{x} = \sqrt{2} \cdot \left\{ F' \left(\sin \frac{\pi}{4} \right) - E' \left(\sin \frac{\pi}{4} \right) \right\} =$
- 8) $\int \frac{\sin^2 x \cdot Tgx}{\sqrt{1+\cos^2 x}} \frac{dx}{x}$ (VIII, 396).
- 9) $\int \frac{\sin^2 x \cdot Tgx}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{p^2} \{ F'(p) - E'(p) \}$ (VIII, 394).
- 10) $\int \frac{\sin^2 4x \cdot Tgx}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{4}{3p^2} \{ (2-p^2) E'(p) - 2(1-p^2) F'(p) \}$ (VIII, 394*).
- 11) $\int \frac{\sin^4 x \cdot Tgx}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{3p^2} \{ (2+p^2) F'(p) - 2(1+p^2) E'(p) \}$ (VIII, 394).
- 12) $\int \frac{\cos^2 2x \cdot Tgx}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{1}{p^2} \{ E'(p) - (1-p^2) F'(p) \}$ (VIII, 394).
- 13) $\int \frac{\cos^4 2x \cdot Tgx}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{1}{3p^2} \{ (2+3p^2)(1-p^2) F'(p) - (1-2p^2) E'(p) \}$ (VIII, 394*).
- 14) $\int \frac{\sin^2 x \cdot Tgx}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{p^2(1-p^2)} \{ E'(p) - (1-p^2) F'(p) \}$ (VIII, 395).
- 15) $\int \frac{\cos^2 2x \cdot Tgx}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{1}{p^2} \{ F'(p) - E'(p) \}$ (VIII, 395*).
- 16) $\int \frac{\sin^2 x \cdot Tgx}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{p^2} \{ E'(p) - (1-p^2) F'(p) \}$ (VIII, 394).
- 17) $\int \frac{\sin^2 4x \cdot Tgx}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{4}{3p^2} \{ (2-p^2) E'(p) - 2(1-p^2) F'(p) \}$ (VIII, 395*).

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. en dén. bin. irr. et plus. fact. au num. avec Tgx . TABLE 184, suite. Lim. 0 et ∞ .

$$18) \int \frac{\sin^4 x \cdot Tgx}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{3p^4} \{ (2+3p^2)(1-p^2)F'(p) - 2(1-2p^2)E'(p) \} \quad (\text{VIII}, 395).$$

$$19) \int \frac{\cos^2 2x \cdot Tgx}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{1}{p^2} \{ F'(p) - E'(p) \} \quad (\text{VIII}, 394*).$$

$$20) \int \frac{\cos^4 2x \cdot Tgx}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{1}{3p^4} \{ (2+p^2)F'(p) - 2(1+p^2)E'(p) \} \quad (\text{VIII}, 395*).$$

$$21) \int \frac{\sin^2 x \cdot Tgx}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{p^2} \{ F'(p) - E'(p) \} \quad (\text{VIII}, 395).$$

$$22) \int \frac{\cos^2 2x \cdot Tgx}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{1}{p^2(1-p^2)} \{ E'(p) - (1-p^2)F'(p) \} \quad (\text{VIII}, 396*).$$

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. en dén. bin. irr. et plus. fact. au num. sans Tgx . TABLE 185. Lim. 0 et ∞ .

$$1) \int \frac{\sin x \cdot \cos 4x}{\sqrt{p+q} \cos 4x} \frac{dx}{x} = \frac{1}{q} \left\{ \sqrt{p+q} \cdot E'\left(\sqrt{\frac{2q}{p+q}}\right) - \frac{p}{\sqrt{p+q}} F'\left(\sqrt{\frac{2q}{p+q}}\right) \right\} \quad (\text{VIII}, 389).$$

$$2) \int \frac{\sin x \cdot \cos 4x}{\sqrt{p-q} \cos 4x} \frac{dx}{x} = \frac{1}{q} \left\{ \frac{p}{\sqrt{p+q}} F'\left(\sqrt{\frac{2q}{p+q}}\right) - \sqrt{p+q} \cdot E'\left(\sqrt{\frac{2q}{p+q}}\right) \right\} \quad (\text{VIII}, 389).$$

$$3) \int \frac{\sin x \cdot \cos x}{\sqrt{1+\sin^2 x}} \frac{dx}{x} = \sqrt{2} \cdot \left\{ F'\left(\sin \frac{\pi}{4}\right) - E'\left(\sin \frac{\pi}{4}\right) \right\} = 4) \int \frac{\sin x \cdot \cos^2 x}{\sqrt{1+\sin^2 x}} \frac{dx}{x} \quad (\text{VIII}, 396).$$

$$5) \int \frac{\sin^3 x \cdot \cos x}{\sqrt{1+\sin^2 2x}} \frac{dx}{x} = \frac{1}{4} \left\{ \sqrt{2} \cdot E'\left(\sin \frac{\pi}{4}\right) - \sqrt{\frac{1}{2}} \cdot F'\left(\sin \frac{\pi}{4}\right) \right\} \quad (\text{VIII}, 396).$$

$$6) \int \frac{\sin x \cdot \cos x}{\sqrt{1+\cos^2 x}} \frac{dx}{x} = \sqrt{2} \cdot E'\left(\sin \frac{\pi}{4}\right) - \sqrt{\frac{1}{2}} \cdot F'\left(\sin \frac{\pi}{4}\right) = 7) \int \frac{\sin x \cdot \cos^3 x}{\sqrt{1+\cos^2 x}} \frac{dx}{x} \quad (\text{VIII}, 396).$$

$$8) \int \frac{\sin^3 x \cdot \cos x}{\sqrt{1+\cos^2 2x}} \frac{dx}{x} = \frac{1}{2\sqrt{2}} \left\{ F'\left(\sin \frac{\pi}{4}\right) - E'\left(\sin \frac{\pi}{4}\right) \right\} \quad (\text{VIII}, 396).$$

$$9) \int \frac{\sin x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{p^2} \{ E'(p) - (1-p^2)F'(p) \} = 10) \int \frac{\sin x \cdot \cos^2 x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} \quad (\text{VIII}, 394).$$

$$11) \int \frac{\sin x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{3p^4} \{ (2+3p^2)(1-p^2)F'(p) - 2(1-2p^2)E'(p) \} \quad (\text{VIII}, 394).$$

$$12) \int \frac{\sin x \cdot \cos^4 x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{3p^4} \{ (2+3p^2)(1-p^2)F'(p) - 2(1-2p^2)E'(p) \} \quad (\text{VIII}, 394).$$

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. en dén. bin. irr. et plus. fact. au num. sans T_{p^2} . TABLE 185, suite. Lim. 0 et ∞ .

$$13) \int \frac{\sin^2 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{3p^2} \{(2-p^2)E(p) - 2(1-p^2)F(p)\} = 14) \int \frac{\sin^2 x \cdot \cos^2 x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} \quad (\text{VIII}, 394).$$

$$15) \int \frac{\sin^2 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{1}{4p^2} \{F(p) - E(p)\} \quad (\text{VIII}, 394).$$

$$16) \int \frac{\sin^2 x \cdot \cos^2 x}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{1}{48p^2} \{(2+p^2)F(p) - 2(1+p^2)E(p)\} \quad (\text{VIII}, 394).$$

$$17) \int \frac{\sin x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{p^2} \{F(p) - E(p)\} = 18) \int \frac{\sin x \cdot \cos^2 x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} \quad (\text{VIII}, 395).$$

$$19) \int \frac{\sin^2 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{1}{4p^2(1-p^2)} \{E(p) - (1-p^2)F(p)\} \quad (\text{VIII}, 395).$$

$$20) \int \frac{\sin x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{p^2} \{F(p) - E(p)\} = 21) \int \frac{\sin x \cdot \cos^2 x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} \quad (\text{VIII}, 394).$$

$$22) \int \frac{\sin x \cdot \cos^2 x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{8p^2} \{(2+p^2)F(p) - 2(1+p^2)E(p)\} \quad (\text{VIII}, 395).$$

$$23) \int \frac{\sin x \cdot \cos^2 x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{8p^2} \{(2+p^2)F(p) - 2(1+p^2)E(p)\} \quad (\text{VIII}, 395).$$

$$24) \int \frac{\sin^2 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{8p^2} \{(2-p^2)E(p) - 2(1-p^2)F(p)\} \quad (\text{VIII}, 395).$$

$$25) \int \frac{\sin^2 x \cdot \cos^2 x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{8p^2} \{(2-p^2)E(p) - 2(1-p^2)F(p)\} \quad (\text{VIII}, 395).$$

$$26) \int \frac{\sin^2 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{1}{4p^2} \{E(p) - (1-p^2)F(p)\} \quad (\text{VIII}, 394).$$

$$27) \int \frac{\sin^2 x \cdot \cos^2 x}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{1}{48p^2} \{(2+8p^2)(1-p^2)F(p) - 2(1-2p^2)E(p)\} \quad (\text{VIII}, 395).$$

$$28) \int \frac{\sin x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{p^2(1-p^2)} \{E(p) - (1-p^2)F(p)\} = 29) \int \frac{\sin x \cdot \cos^2 x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} \quad (\text{VIII}, 396).$$

$$30) \int \frac{\sin^2 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{4p^2} \{F(p) - E(p)\} \quad (\text{VIII}, 395).$$

F. Alg. rat. fract. à dén. monôme;
Circ. Dir. en dén. prod. de bin. et mon.

TABLE 186.

Lim. 0 et ∞.

$$\begin{aligned}
 1) \int \frac{\sin x}{p^2 + \text{Tg}^2 x} \frac{dx}{x \cos^2 x} &= \frac{\pi}{2p} \\
 2) \int \frac{\sin x}{p^2 + \text{Tg}^2 x} \frac{dx}{x \cos^2 x} & \text{ (VIII, 389).} \\
 3) \int \frac{\text{Tg} x}{p^2 + \text{Tg}^2 2x} \frac{dx}{x \cos^2 2x} &= \frac{\pi}{2p} \text{ (VIII, 389*)}. \\
 4) \int \frac{\sin x}{\sin^2 x + p^2 \cos^2 x} \frac{dx}{x \cos 2x} &= \frac{\pi}{2p} \frac{1-p^2}{1+p^2} \\
 5) \int \frac{\text{Tg} x}{\sin^2 x + p^2 \cos^2 x} \frac{dx}{x \cos 2x} & \text{ (VIII, 389).} \\
 6) \int \frac{\text{Tg} x}{\sin^2 2x + p^2 \cos^2 2x} \frac{dx}{x \cos 4x} &= \frac{\pi}{2p} \frac{1-p^2}{1+p^2} \text{ (VIII, 389*)}. \\
 7) \int \frac{\sin x \cdot \cos x}{\sin^2 x + p^2 \cos^2 x} \frac{dx}{x \cos 2x} &= \frac{1}{2p} \frac{\pi}{1+p^2} \\
 8) \int \frac{\sin x \cdot \cos^3 x}{\sin^2 x + p^2 \cos^2 x} \frac{dx}{x \cos 2x} & \text{ (VIII, 389).} \\
 9) \int \frac{\text{Tg} x \cdot \cos^3 2x}{\sin^2 2x + p^2 \cos^2 2x} \frac{dx}{x \cos 4x} &= \frac{1}{2p} \frac{\pi}{1+p^2} \text{ (VIII, 389*)}. \\
 10) \int \frac{\sin^3 x}{\sin^2 x + p^2 \cos^2 x} \frac{dx}{x \cos 2x} &= -\frac{1}{2} \frac{p\pi}{1+p^2} \\
 11) \int \frac{\sin^3 x \cdot \text{Tg} x}{\sin^2 x + p^2 \cos^2 x} \frac{dx}{x \cos 2x} & \text{ (VIII, 389).} \\
 12) \int \frac{\sin^3 x \cdot \cos x}{\sin^2 2x + p^2 \cos^2 2x} \frac{dx}{x \cos 4x} &= -\frac{1}{8} \frac{p\pi}{1+p^2} \text{ (VIII, 389*)}.
 \end{aligned}$$

F. Alg. rat. fract. à dén. monôme; $[p^2 < 1]$.
Circ. Dir. en dén. trinôme et un fact. au num.;

TABLE 187.

Lim. 0 et ∞.

$$\begin{aligned}
 1) \int \frac{\sin x}{1-2q \cos 2x + q^2} \frac{dx}{x} &= \frac{\pi}{2} \frac{1}{1-q^2} [q^2 < 1], = \frac{\pi}{2} \frac{1}{q^2-1} [q^2 > 1] \text{ (VIII, 392).} \\
 2) \int \frac{\text{Tg} x}{1-2q \cos 2x + q^2} \frac{dx}{x} &= \frac{\pi}{2} \frac{1}{1-q^2} [q^2 < 1], = \frac{\pi}{2} \frac{1}{q^2-1} [q^2 > 1] \text{ (VIII, 392).} \\
 3) \int \frac{\text{Tg} x}{1-2q \cos 4x + q^2} \frac{dx}{x} &= \frac{\pi}{2} \frac{1}{1-q^2} [q^2 < 1], = \frac{\pi}{2} \frac{1}{q^2-1} [q^2 > 1] \text{ (VIII, 392).} \\
 4) \int \frac{\sin x}{1-2q \cos 2x + q^2} \frac{dx}{x} &= \frac{\pi}{2} \frac{1}{1-q} [q^2 < 1], = \frac{\pi}{2q} \frac{1}{q-1} [q^2 > 1] \text{ (VIII, 392*)}. \\
 5) \int \frac{\sin x}{s+q \sin^2 x + r \cos^2 x} \frac{dx}{x} &= \frac{\pi}{2 \sqrt{(s+q)(s+r)}} \\
 6) \int \frac{\text{Tg} x}{s+q \sin^2 x + r \cos^2 x} \frac{dx}{x} & \text{ (VIII, 390).} \\
 7) \int \frac{\text{Tg} x}{s+q \sin^2 2x + r \cos^2 2x} \frac{dx}{x} &= \frac{\pi}{2 \sqrt{(s+q)(s+r)}} \text{ (VIII, 390).} \\
 8) \int \frac{\sin^3 x}{1-2p \cos 2x + p^2} \frac{dx}{x} &= \frac{1}{4} \frac{\pi}{1+p} \text{ (VIII, 392).}
 \end{aligned}$$

F. Alg. rat. fract. à dén. monôme; $[p^2 < 1]$. TABLE 187, suite.
Circ. Dir. en dén. trinôme et un fact. au num.;

Lim. 0 et ∞ .

$$\begin{aligned}
 9) \int \frac{\sin x}{1-2p \cos 4x + p^2} \frac{dx}{x} &= \frac{1}{2} \frac{\pi}{1-p^2} = & 10) \int \frac{Tg x}{1-2p \cos 4x + p^2} \frac{dx}{x} & \text{(VIII, 535).} \\
 11) \int \frac{Tg x}{1-2p \cos 8x + p^2} \frac{dx}{x} &= \frac{1}{2} \frac{\pi}{1-p^2} \text{ (VIII, 535).} \\
 12) \int \frac{\sin^2 x}{1-2p \cos 4x + p^2} \frac{dx}{x} &= \frac{\pi}{4(1-p^2)} \text{ (VIII, 535).} \\
 13) \int \frac{\sin ax}{1-2p \cos rx + p^2} \frac{dx}{x} &= \frac{\pi}{2} \frac{1-p^a}{(1-p)^2} \text{ (H, 29).} \\
 14) \int \frac{\sin x}{(1-2p \cos 2x + p^2)^{a+1}} \frac{dx}{x} &= \frac{\pi}{2(1-p^2)^{2a+1}} \sum_0^a \binom{a}{n} p^{2n} \text{ (VIII, 387).} \\
 15) \int \frac{Tg x}{(1-2p \cos 2x + p^2)^{a+1}} \frac{dx}{x} &= \frac{\pi}{2(1-p^2)^{2a+1}} \sum_0^a \binom{a}{n} p^{2n} \text{ (VIII, 387).} \\
 16) \int \frac{Tg x}{(1-2p \cos 4x + p^2)^{a+1}} \frac{dx}{x} &= \frac{\pi}{2(1-p^2)^{2a+1}} \sum_0^a \binom{a}{n} p^{2n} \text{ (VIII, 387).}
 \end{aligned}$$

F. Alg. rat. fract. à dén. monôme; $[p^2 < 1]$. TABLE 188.
Circ. Dir. en dén. trin. et plus. fact. au num. avec $Tg x$;

Lim. 0 et ∞ .

$$\begin{aligned}
 1) \int \frac{\sin^2 x \cdot Tg x}{1-2p \cos 2x + p^2} \frac{dx}{x} &= \frac{1}{4} \frac{\pi}{1+p} = & 2) \int \frac{\sin^2 2x \cdot Tg x}{1-2p \cos 4x + p^2} \frac{dx}{x} & \text{(VIII, 392).} \\
 3) \int \frac{\sin^2 x \cdot Tg x}{1-2p \cos 4x + p^2} \frac{dx}{x} &= \frac{\pi}{4(1-p^2)} \text{ (VIII, 535).} \\
 4) \int \frac{\cos^2 2x \cdot Tg x}{1-2p \cos 4x + p^2} \frac{dx}{x} &= \frac{1}{4} \frac{\pi}{1-p} \text{ (VIII, 392*).} \\
 5) \int \frac{\cos 2ax \cdot Tg x}{1-2p \cos 2x + p^2} \frac{dx}{x} &= \frac{\pi}{2} \frac{p^a}{1-p^2} = & 6) \int \frac{\cos 4ax \cdot Tg x}{1-2p \cos 4x + p^2} \frac{dx}{x} & \text{(VIII, 386).} \\
 7) \int \frac{\cos 8ax \cdot Tg x}{1-2p \cos 8x + p^2} \frac{dx}{x} &= \frac{\pi}{2} \frac{p^a}{1-p^2} \text{ (VIII, 534).} \\
 8) \int \frac{\cos \{(2a+1)2x\} \cdot Tg x}{1-2p \cos 4x + p^2} \frac{dx}{x} &= 0 = & 9) \int \frac{\cos \{(2a+1)4x\} \cdot Tg x}{1-2p \cos 8x + p^2} \frac{dx}{x} & \text{(VIII, 534).} \\
 10) \int \frac{\sin^2 x \cdot Tg^{2a+1} x}{1-2p \cos 2x + p^2} \frac{dx}{x} &= \frac{\pi}{4} \operatorname{Sec} a\pi \cdot \left\{1 - \left(\frac{1-p}{1+p}\right)^{2a+1}\right\} = & 11) \int \frac{\sin^2 x \cdot Tg^{2a} x}{1-2p \cos 2x + p^2} \frac{dx}{x} & \\
 12) \int \frac{\sin^2 x \cdot \cos x \cdot Tg^{2a} 2x}{1-2p \cos 4x + p^2} \frac{dx}{x} &= \frac{\pi}{16} \operatorname{Sec} a\pi \cdot \left\{1 - \left(\frac{1-p}{1+p}\right)^{2a+1}\right\} & & \text{(VIII, 387).}
 \end{aligned}$$

F. Alg. rat. fract. à dén. monôme; $[p^2 < 1]$. TABLE 188, suite. Lim. 0 et ∞ .
Circ. Dir. en dén. trin. et plus. fact. au num. avec Tgx ;

$$13) \int \frac{\sin^2 x \cdot Tg^{2a+1} x}{1-2p \cos 4x + p^2} \frac{dx}{x} = \frac{\pi}{8} \frac{\cos \{(a+1)\pi\}}{1+p} \frac{\{(1+\sqrt{p})^{2a+1} - (1-\sqrt{p})^{2a+1}\}^2}{(1-p)^{2a+1}} \text{ (VIII, 535).}$$

$$14) \int \frac{\sin^2 x \cdot Tg^{2a} x}{1-2p \cos 4x + p^2} \frac{dx}{x} = \frac{\pi}{8} \frac{\cos \{(a+1)\pi\}}{1+p} \frac{\{(1+\sqrt{p})^{2a+1} - (1-\sqrt{p})^{2a+1}\}^2}{(1-p)^{2a+1}} \text{ (VIII, 535).}$$

$$15) \int \frac{\sin^2 x \cdot \cos x \cdot Tg^{2a} 2x}{1-2p \cos 8x + p^2} \frac{dx}{x} = \frac{\pi}{32} \frac{\cos \{(a+1)\pi\}}{1+p} \frac{\{(1+\sqrt{p})^{2a+1} - (1-\sqrt{p})^{2a+1}\}^2}{(1-p)^{2a+1}} \text{ (VIII, 535).}$$

$$16) \int \frac{\cos^2 2x \cdot \cos 2ax \cdot Tgx}{1-2p \cos 4x + p^2} \frac{dx}{x} = \frac{\pi}{2(1-p^2)} \left(\frac{1+p}{2}\right)^a \text{ (VIII, 387*)}. \quad 17) \int \frac{\cos^2 2x \cdot \cos 2ax \cdot Tgx}{1-2p \cos 8x + p^2} \frac{dx}{x} = \frac{\pi}{2^{a+1}} \frac{(1+\sqrt{p})^a + (1-\sqrt{p})^a}{1-p^2} \text{ (VIII, 535).}$$

F. Alg. rat. fract. à dén. monôme; $[p^2 < 1]$. TABLE 189. Lim. 0 et ∞ .
Circ. Dir. en dén. trin. et plus. fact. au num. sans Tgx ;

$$1) \int \frac{\sin x \cdot \cos x}{1-2p \cos 2x + p^2} \frac{dx}{x} = \frac{1}{4} \frac{\pi}{1-p} = \quad 2) \int \frac{\sin x \cdot \cos^2 x}{1-2p \cos 2x + p^2} \frac{dx}{x} \text{ (VIII, 392).}$$

$$3) \int \frac{\sin x \cdot \cos^2 x}{1-2p \cos 4x + p^2} \frac{dx}{x} = \frac{1}{4} \frac{\pi}{1-p^2} = \quad 4) \int \frac{\sin^2 x \cdot \cos x}{1-2p \cos 8x + p^2} \frac{dx}{x} \text{ (VIII, 535).}$$

$$5) \int \frac{\sin x \cdot \cos ax}{1-2p \cos x + p^2} \frac{dx}{x} = \frac{\pi}{2} \frac{p^{a-1}}{1-p} \text{ (VIII, 639).}$$

$$6) \int \frac{\sin x \cdot \cos 2ax}{1-2p \cos 2x + p^2} \frac{dx}{x} = \frac{\pi}{2} \frac{p^a}{1-p^2} = \quad 7) \int \frac{\sin x \cdot \cos 4ax}{1-2p \cos 4x + p^2} \frac{dx}{x} \text{ (VIII, 386, 534).}$$

$$8) \int \frac{\sin x \cdot \cos \{(2a+1)x\}}{1-2p \cos 4x + p^2} \frac{dx}{x} = 0 \text{ (VIII, 534).}$$

$$9) \int \frac{\sin ax \cdot \cos x}{1-2p \cos 2x + p^2} \frac{dx}{x} = \frac{\pi}{4} \frac{-2 + p^{\frac{1}{2}(a-1)} \{1 + (-1)^{a-1}\} + p^{\frac{1}{2}a} \{1 + (-1)^a\}}{(1-p)^2} \text{ (VIII, 639).}$$

$$10) \int \frac{\sin x \cdot \cos ax}{1-2p \cos 2x + p^2} \frac{dx}{x} = \frac{\pi}{4} \frac{p^{\frac{1}{2}(a-1)} \{1 + (-1)^{a-1}\} + p^{\frac{1}{2}a} \{1 + (-1)^a\}}{(1-p)^2} \text{ (VIII, 639).}$$

$$11) \int \frac{\cos^{a-1} x \cdot \cos ax \cdot \sin x}{1-2p \cos 2x + p^2} \frac{dx}{x} = \frac{\pi}{2(1-p^2)} \left(\frac{1+p}{2}\right)^a = \quad 12) \int \frac{\cos^a x \cdot \cos ax \cdot \sin x}{1-2p \cos 2x + p^2} \frac{dx}{x} \text{ (VIII, 417).}$$

$$13) \int \frac{\cos^{a-1} x \cdot \cos ax \cdot \sin x}{1-2p \cos 4x + p^2} \frac{dx}{x} = \frac{\pi}{2^{a+1}} \frac{(1+\sqrt{p})^a + (1-\sqrt{p})^a}{1-p^2} \text{ (VIII, 535).}$$

F. Alg. rat. fract. à dén. monôme; $[p^2 < 1]$. TABLE 189, suite. Lim. 0 et ∞ .
Circ. Dir. en dén. trin. et plus. fact. au num. sans $l'g x$;

$$14) \int \frac{\cos^a x \cdot \cos ax \cdot \sin x}{1 - 2p \cos 4x + p^2} \frac{dx}{x} = \frac{\pi}{2^{a+1}} \frac{(1 + \sqrt{p})^a + (1 - \sqrt{p})^a}{1 - p^2} \quad (\text{VIII}, 535).$$

$$15) \int \frac{\cos^{2a} x \cdot \sin 2ax \cdot \sin^2 x}{1 - 2p \cos 2x + p^2} \frac{dx}{x} = \frac{\pi}{p} \frac{(1 + p)^{2a} - 1}{2^{2a+1}} = \quad 16) \int \frac{\cos^{2a+1} x \cdot \sin 2ax \cdot \sin^2 x}{1 - 2p \cos 2x + p^2} \frac{dx}{x} \quad (\text{VIII}, 387).$$

$$17) \int \frac{\cos^{2a+1} 2x \cdot \sin 4ax \cdot \sin^2 x}{1 - 2p \cos 4x + p^2} \frac{dx}{x} = \frac{\pi}{p} \frac{(1 + p)^{2a} - 1}{2^{2a+1}} \quad (\text{VIII}, 387).$$

$$18) \int \frac{\cos^{2a} x \cdot \sin 2ax \cdot \sin^2 x}{1 - 2p \cos 4x + p^2} \frac{dx}{x} = \frac{\pi}{2^{2a+1}} \frac{(1 + \sqrt{p})^{2a} - (1 - \sqrt{p})^{2a}}{(1 + p)\sqrt{p}} \quad (\text{VIII}, 535).$$

$$19) \int \frac{\cos^{2a+1} x \cdot \sin 2ax \cdot \sin^2 x}{1 - 2p \cos 4x + p^2} \frac{dx}{x} = \frac{\pi}{2^{2a+1}} \frac{(1 + \sqrt{p})^{2a} - (1 - \sqrt{p})^{2a}}{(1 + p)\sqrt{p}} \quad (\text{VIII}, 535).$$

$$20) \int \frac{\cos^{2a+1} 2x \cdot \sin 4ax \cdot \sin^2 x}{1 - 2p \cos 8x + p^2} \frac{dx}{x} = \frac{\pi}{2^{2a+1}} \frac{(1 + \sqrt{p})^{2a} - (1 - \sqrt{p})^{2a}}{(1 + p)\sqrt{p}} \quad (\text{VIII}, 535).$$

$$21) \int \sin^s rx \frac{\sin(\frac{1}{2}s\pi - srx)}{1 - 2p \cos 2rx + p^2} \frac{dx}{x} = \frac{\pi}{2^{s+1}} (1 - p)^{s-1} \quad (\text{H}, 147).$$

$$22) \int \sin^{s-1} rx \frac{\sin\{(s-1)\frac{1}{2}\pi - (s+1)rx\}}{1 - 2p \cos 2rx + p^2} \frac{dx}{x} = \frac{-p\pi}{2^{s-1}} (1 - p)^{s-1} \quad (\text{H}, 169).$$

$$23) \int \cos^s rx \frac{\sin srx}{1 - 2p \cos 2rx + p^2} \frac{dx}{x} = \frac{\pi}{2(1-p)^2} \{1 - 2^{-s}(1+p)^s\} \quad (\text{H}, 145).$$

$$24) \int \cos^{s-1} rx \frac{\sin\{(s+1)rx\}}{1 - 2p \cos 2rx + p^2} \frac{dx}{x} = \frac{\pi}{2^s(1-p)^2} \{2^{s-1} - p(1+p)^{s-1}\} \quad (\text{H}, 165).$$

$$25) \int \sin^s rx \cdot \cos^q rx \frac{\sin\{\frac{1}{2}s\pi - (q+s)rx\}}{1 - 2p \cos 2rx + p^2} \frac{dx}{x} = \frac{\pi}{2^{s+q+1}} (1+p)^q (1-p)^{s-1} \quad (\text{H}, 149).$$

$$26) \int \sin^{s-1} rx \cdot \cos^{q-1} rx \frac{\sin\{\frac{1}{2}(s-1)\pi - (q+s)rx\}}{1 - 2p \cos 2rx + p^2} \frac{dx}{x} = \frac{-p\pi}{2^{s+q-1}} (1+p)^{q-1} (1-p)^{s-1} \quad (\text{H}, 168).$$

F. Alg. rat. fract. à dén. monôme; TABLE 190. Lim. 0 et ∞ .
Circ. Dir. en dén. trin. Autre forme. $[p < 1, q < 1]$.

$$1) \int \frac{1 - p \cos x}{1 - 2p \cos x + p^2} \sin ax \frac{dx}{x} = \frac{\pi}{2} \frac{1 - p^a}{1 - p} \quad (\text{VIII}, 639).$$

$$2) \int \frac{1 - q \cos rx - q^s \cos srx + q^{s+1} \cos\{(s-1)rx\}}{1 - 2q \cos rx + q^2} \sin x \frac{dx}{x} = \frac{\pi}{2} \quad (\text{H}, 30).$$

$$3) \int \frac{\sin rx - q^{s-1} \sin rx + q^s \sin \{(s-1)rx\}}{1 - 2q \cos rx + q^2} \sin x \frac{dx}{x^2} = \frac{\pi}{2} \frac{1 - q^{s-1}}{1 - q} \quad (\text{H, 30}).$$

$$4) \int \frac{\sin rx - q^{s-1} \sin rx + q^s \sin \{(s-1)rx\}}{1 - 2q \cos rx + q^2} \cos x \frac{dx}{x} = \frac{\pi}{2} \frac{1 - q^{s-1}}{1 - q} \quad (\text{H, 30}).$$

$$5) \int \frac{\sin rx - q^{s-1} \sin rx + q^s \sin \{(s-1)rx\}}{1 - 2q \cos rx + q^2} \sin^2 x \frac{dx}{x^2} = \frac{\pi}{2} \left\{ \frac{1 - q^{s-1}}{1 - q} - \frac{1}{4} \right\} \quad (\text{H, 30}).$$

$$6) \int \frac{1}{1 - 2p \cos 2x + p^2} \frac{\sin x}{1 - 2q \cos 2x + q^2} \frac{dx}{x} = \frac{\pi}{2(1-p^2)(1-q^2)} \frac{1+pq}{1-pq} \quad (\text{VIII, 418}).$$

$$7) \int \frac{1}{1 - 2p \cos 2x + p^2} \frac{\text{Tgx}}{1 - 2q \cos 2x + q^2} \frac{dx}{x} = \frac{\pi}{2(1-p^2)(1-q^2)} \frac{1+pq}{1-pq} \quad (\text{VIII, 418}).$$

$$8) \int \frac{\sin^2 x}{1 - 2p \cos 2x + p^2} \frac{\cos x}{1 - 2q \cos 2x + q^2} \frac{dx}{x} = \frac{1}{16} \frac{\pi}{1-pq} \quad (\text{VIII, 418}).$$

$$9) \int \frac{\sin^2 x}{1 - 2p \cos 2x + p^2} \frac{\cos^2 x}{1 - 2q \cos 2x + q^2} \frac{dx}{x} = \frac{1}{16} \frac{\pi}{1-pq} \quad (\text{VIII, 418}).$$

$$10) \int \frac{1}{1 - 2p \cos 4x + p^2} \frac{\sin x}{1 - 2q \cos 2x + q^2} \frac{dx}{x} = \frac{\pi}{2(1-p^2)(1-q^2)} \frac{1+pq^2}{1-pq^2} \quad (\text{VIII, 535}).$$

$$11) \int \frac{1}{1 - 2p \cos 4x + p^2} \frac{\text{Tgx}}{1 - 2q \cos 2x + q^2} \frac{dx}{x} = \frac{\pi}{2(1-p^2)(1-q^2)} \frac{1+pq^2}{1-pq^2} \quad (\text{VIII, 535}).$$

$$12) \int \frac{\sin^2 x}{1 - 2p \cos 4x + p^2} \frac{\cos x}{1 - 2q \cos 2x + q^2} \frac{dx}{x} = \frac{\pi}{16(1+p)(1-pq^2)} \quad (\text{VIII, 536}).$$

$$13) \int \frac{\sin^2 x}{1 - 2p \cos 4x + p^2} \frac{\cos^2 x}{1 - 2q \cos 2x + q^2} \frac{dx}{x} = \frac{\pi}{16(1+p)(1-pq^2)} \quad (\text{VIII, 536}).$$

$$14) \int \frac{1}{1 - 2p \cos 4x + p^2} \frac{\sin x}{1 - 2q \cos 4x + q^2} \frac{dx}{x} = \frac{\pi}{2(1-p^2)(1-q^2)} \frac{1+pq}{1-pq} \quad (\text{VIII, 536}).$$

$$15) \int \frac{1}{1 - 2p \cos 4x + p^2} \frac{\text{Tgx}}{1 - 2q \cos 4x + q^2} \frac{dx}{x} = \frac{\pi}{2(1-p^2)(1-q^2)} \frac{1+pq}{1-pq} \quad (\text{VIII, 536}).$$

$$16) \int \frac{\sin^2 x}{1 - 2p \cos 4x + p^2} \frac{\cos x}{1 - 2q \cos 4x + q^2} \frac{dx}{x} = \frac{\pi}{16(1+p)(1+q)(1-pq)} \quad (\text{VIII, 536}).$$

$$17) \int \frac{\sin^2 x}{1 - 2p \cos 4x + p^2} \frac{\cos^2 x}{1 - 2q \cos 4x + q^2} \frac{dx}{x} = \frac{\pi}{16(1+p)(1+q)(1-pq)} \quad (\text{VIII, 536}).$$

$$18) \int \frac{\sin rx - q^{s-1} \sin rx + q^s \sin \{(s-1)rx\}}{(1 - 2p \cos rx + p^2)(1 - 2q \cos rx + q^2)} \frac{dx}{x} = \frac{\pi}{2q(1-p)^2} \left\{ \frac{1-q^s}{1-q} - \frac{1-p^s q^s}{1-pq} \right\} \quad (\text{H, 173}).$$

$$1) \int \frac{1}{\cos px} \frac{dx}{q^s + x^s} = \infty \text{ (VIII, 564).}$$

$$2) \int \frac{\sin 2srx}{\sin rx} \frac{dx}{q^s + x^s} = \frac{\pi}{q} \frac{1 - e^{-2sqr}}{e^{sqr} - e^{-sqr}} =$$

$$3) \frac{2}{q} \int \frac{\sin^2 srx}{\sin rx} \frac{x dx}{q^s + x^s} \text{ (H, 87).}$$

$$4) \int \sin^{s-1} rx \frac{\sin(\frac{1}{2}s\pi - srx)}{\cos rx} \frac{dx}{q^s + x^s} = \frac{\pi}{q} \frac{2^{1-s}}{e^{sqr} - e^{-sqr}} (1 - e^{-2sqr})^s \text{ (H, 148).}$$

$$5) \int \sin^{s-1} rx \frac{\cos(\frac{1}{2}s\pi - srx)}{\cos rx} \frac{x dx}{q^s + x^s} = \pi \frac{2^{1-s}}{e^{sqr} - e^{-sqr}} (1 - e^{-2sqr})^s \text{ (H, 148);}$$

$$6) \int \cos^{s-1} rx \frac{\sin srx}{\sin rx} \frac{dx}{q^s + x^s} = \frac{\pi}{q} \frac{2}{e^{sqr} - e^{-sqr}} \{1 - 2^{-s} (1 + e^{-2sqr})^s\} \text{ (H, 146).}$$

$$7) \int \frac{1 - \cos^s rx \cdot \cos srx}{\sin 2rx} \frac{x dx}{q^s + x^s} = \frac{\pi}{e^{sqr} - e^{-sqr}} \{1 - 2^{-s} (1 + e^{-2sqr})^s\} \text{ (H, 146).}$$

$$8) \int \cos^{s-1} rx \frac{\sin \{(s+1)rx\}}{\sin rx} \frac{dx}{q^s + x^s} = \frac{\pi}{q} \frac{2^{1-s}}{e^{sqr} - e^{-sqr}} \{2^{s-1} - (1 + e^{-2sqr})^{s-1} e^{-sqr}\}$$

(H, 165).

$$9) \int \cos^{s-1} rx \frac{\cos \{(s+1)rx\}}{\sin rx} \frac{x dx}{q^s + x^s} = \pi \frac{2^{1-s}}{e^{sqr} - e^{-sqr}} \{2^{s-1} - (1 + e^{-2sqr})^{s-1} e^{-sqr}\}$$

(H, 165).

$$10) \int \cos(pTy^s x) \frac{x}{\sin 2x} \frac{dx}{q^s + x^s} = \frac{\pi}{e^{sqr} - e^{-sqr}} e^{-\frac{s^2 q - s - q}{e^q + e^{-q}}} \text{ (VIII, 421*)}.}$$

$$11) \int \cos(pTy^s x) \frac{x}{Ty 2x} \frac{dx}{q^s + x^s} = \frac{\pi}{2} \left\{ \frac{e^{sq} + e^{-sq}}{e^{sq} - e^{-sq}} e^{-\frac{s^2 q - s - q}{e^q + e^{-q}}} - e^{-s} \right\} \text{ (VIII, 421*)}.}$$

$$12) \int \frac{\sin 2srx}{\sin rx} \frac{dx}{4q^s + x^s} = \frac{\pi}{4q^s} \frac{(e^{qr} + e^{-qr}) \sin qr + (e^{qr} - e^{-qr}) \cos qr + e^{-(2s+1)qr}}{e^{2qr} - [\cos \{(2s-1)qr\} + \sin \{(2s-1)qr\}] - e^{-(2s-1)qr} [\sin \{(2s+1)qr\} + \cos \{(2s+1)qr\}] - 2 \cos 2qr + e^{-2qr}}$$

(H, 89).

$$13) \int \frac{\sin^2 srx}{\sin rx} \frac{x dx}{4q^s + x^s} = \frac{\pi}{4q^s} \frac{(e^{qr} + e^{-qr}) \sin qr - e^{-(2s-1)qr} \sin \{(2s+1)qr\} +}{e^{2qr} -} \\ + e^{-(2s+1)qr} \sin \{(2s-1)qr\}}{-2 \cos 2qr + e^{-2qr}} \text{ (H, 89).}$$

$$14) \int \frac{\sin 2srx}{\sin rx} \frac{x^2 dx}{4q^s + x^s} = \frac{\pi}{2q} \frac{(e^{qr} - e^{-qr}) \cos qr - (e^{qr} + e^{-qr}) \sin qr + e^{-(2s+1)qr}}{e^{2qr} -} \\ [\cos \{(2s-1)qr\} - \sin \{(2s-1)qr\}] - e^{-(2s-1)qr} [\cos \{(2s+1)qr\} - \sin \{(2s+1)qr\}] - 2 \cos 2qr + e^{-2qr}}$$

$$15) \int \frac{\sin^s sx}{\sin rx} \frac{x^s dx}{4q^4 + x^4} = \pi \frac{(e^{qr} - e^{-qr}) \cos qr - e^{-(2s-1)qr} \cos \{(2s+1)qr\} + e^{-(2s+1)qr} \cos \{(2s-1)qr\}}{e^{2qr} - 2 \cos 2qr + e^{-2qr}} \quad (\text{H, 89}).$$

$$16) \int \frac{x}{\sin px} \frac{dx}{q^2 - x^2} = \infty =$$

$$17) \int \frac{x}{\sin px} \frac{dx}{q^2 - x^2} \quad (\text{VIII, 564}).$$

$$18) \int \frac{\sin 2sx}{\sin rx} \frac{dx}{q^2 - x^2} = \frac{\pi}{q} \frac{\sin^2 sqr}{\sin qr} \quad (\text{H, 130}). \quad 19) \int \frac{\sin^2 sx}{\sin rx} \frac{x dx}{q^2 - x^2} = -\frac{\pi}{4} \frac{\sin 2sqr}{\sin qr} \quad (\text{H, 130}).$$

$$20) \int \sin^{s-1} rx \frac{\sin(\frac{1}{2}s\pi - sx)}{\cos rx} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \frac{\sin^{s-1} qr}{\cos qr} \cos\left(\frac{1}{2}s\pi - sqr\right) \quad (\text{H, 148}).$$

$$21) \int \sin^{s-1} rx \frac{\cos(\frac{1}{2}s\pi - sx)}{\cos rx} \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} \frac{\sin^{s-1} qr}{\cos qr} \sin\left(\frac{1}{2}s\pi - sqr\right) \quad (\text{H, 148}).$$

$$22) \int \cos^{s-1} rx \frac{\sin sx}{\sin rx} \frac{dx}{q^2 - x^2} = \frac{\pi}{q \sin 2qr} (1 - \cos^s qr \cos sqr) \quad (\text{H, 146}).$$

$$23) \int \frac{1 - \cos^s rx \cos srx}{\sin 2rx} \frac{x dx}{q^2 - x^2} = -\frac{\pi}{4} \cos^{s-1} qr \frac{\sin sqr}{\sin qr} \quad (\text{H, 146}).$$

$$24) \int \cos^{s-1} rx \frac{\sin \{(s+1)rx\}}{\sin rx} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \frac{1}{\sin qr} \{1 - \cos^{s-1} qr \cos \{(s+1)qr\}\} \quad (\text{H, 166}).$$

$$25) \int \cos^{s-1} rx \frac{\cos \{(s+1)rx\}}{\sin rx} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \cos^{s-1} qr \frac{\sin \{(s+1)qr\}}{\sin qr} \quad (\text{H, 166}).$$

$$26) \int \frac{\sin 2sx}{\sin rx} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q^2} \left\{ \frac{\sin^2 sqr}{\sin qr} + \frac{1 - e^{-2sqr}}{e^{qr} - e^{-qr}} \right\} \quad (\text{H, 131}).$$

$$27) \int \frac{\sin^2 sx}{\sin rx} \frac{x dx}{q^2 - x^2} = \frac{\pi}{8q^2} \left\{ 2 \frac{1 - e^{-2sqr}}{e^{qr} - e^{-qr}} - \frac{\sin 2sqr}{\sin qr} \right\} \quad (\text{H, 131}).$$

$$28) \int \frac{\sin 2sx}{\sin rx} \frac{x^2 dx}{q^2 - x^2} = \frac{\pi}{2q} \left\{ \frac{\sin^2 sqr}{\sin qr} - \frac{1 - e^{-2sqr}}{e^{qr} - e^{-qr}} \right\} \quad (\text{H, 131}).$$

$$29) \int \frac{\sin^2 sx}{\sin rx} \frac{x^2 dx}{q^2 - x^2} = -\frac{\pi}{8} \left\{ \frac{\sin 2sqr}{\sin qr} + 2 \frac{1 - e^{-2sqr}}{e^{qr} - e^{-qr}} \right\} \quad (\text{H, 131}).$$

$$1) \int \frac{1}{1 - 2p \cos rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{2q(1-p^2)} \frac{1 + p e^{-qr}}{1 - p e^{-qr}} \quad (\text{VIII, 494}).$$

$$2) \int \frac{\sin rx}{1 - 2p \cos rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} \frac{1}{e^{qr} - p} [p^2 < 1], = \frac{\pi}{2} \frac{1}{p e^{qr} - 1} [p^2 > 1] \quad (\text{VIII, 477}).$$

$$3) \int \frac{\sin rx}{1-2p \cos rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2(1+p)} \frac{e^{qr}}{e^{2qr} - p} [p^2 < 1], = \frac{\pi}{2(1+p)} \frac{e^{qr}}{p e^{2qr} - 1} [p^2 > 1] \quad (\text{VIII, 477}).$$

$$4) \int \frac{\cos rx}{1-2p \cos rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{2q(1-p^2)} \frac{p + e^{-qr}}{1 - p e^{-qr}} \quad (\text{VIII, 494}).$$

$$5) \int \frac{\cos rx}{1-2p \cos rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{2q(1-p)} \frac{e^{-qr}}{1 - p e^{-qr}} \quad (\text{VIII, 536}).$$

$$6) \int \frac{\sin rx}{1-2p \cos rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2(1-p^2)} \frac{(1-p^2) e^{-qr} - p^{d+1} (e^{(s-dr-r)s} + e^{(dr+r-s)s}) + p^{d+2} (e^{(s-dr)s} - e^{(dr-s)s})}{1 - (e^{qr} + e^{-qr})p + p^2} \left[\begin{matrix} p \\ \text{fract.} \end{matrix} \right], = \frac{\pi}{2} \frac{e^{-qr} - p^d}{1 - (e^{qr} + e^{-qr})p + p^2} \left[\begin{matrix} p \\ \text{entier} \end{matrix} \right] \left[d = \mathcal{L} \frac{s}{r} \right]$$

$$7) \int \frac{\cos rx}{1-2p \cos rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{2q(1-p^2)} \frac{(1-p^2) e^{-qr} + p^{d+1} (e^{(s-dr-r)s} - e^{(dr+r-s)s}) - p^{d+2} (e^{(s-dr)s} - e^{(dr-s)s})}{1 - (e^{qr} + e^{-qr})p + p^2} \left[d = \mathcal{L} \frac{s}{r} \right]$$

Sur 6) et 7) voyez 'VIII, 494.

$$8) \int \frac{\sin rx}{1-2p \cos rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} \frac{e^{-qr} - p^d}{(1 - p e^{-qr})(1 - p e^{qr})} \quad (\text{H, 92}).$$

$$9) \int \frac{\cos rx}{1-2p \cos rx - p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} \frac{1}{(1 - p e^{-qr})(1 - p e^{qr})} \left\{ e^{-qr} - \frac{p^{s+1}}{1-p^2} (e^{qr} - e^{-qr}) \right\} \quad (\text{H, 91}).$$

$$10) \int \frac{\sin^{2a+1} x}{1-2p \cos rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1}(1-p^2)} \left\{ e^{-(2a+1)q} \left\{ (1 - e^{(2a+1)2q}) (1 - e^{-2q})^{2a+1} - 2 \sum_{n=0}^a (-1)^n \binom{2a+1}{n} e^{2nq} \right\} + (e^q - e^{-q})^{2a+1} \frac{2p}{e^{qr} - p} \right\} [r > 2a+1], = \frac{(-1)^{a-1} \pi}{2^{2a+1}(1-p^2)} \left\{ e^{-(2a+1)q} \left\{ (1 - e^{(2a+1)2q}) (1 - e^{-2q})^{2a+1} - 2 \sum_{n=0}^a (-1)^n \binom{2a+1}{n} e^{2nq} \right\} + (e^q - e^{-q})^{2a+1} \frac{2p}{e^{(2a+1)q} - p} - 1 \right\} [r = 2a+1] \quad (\text{V, 73}).$$

$$11) \int \frac{\cos^{2a} x}{1-2p \cos rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{2a} q (1-p^2)} \left\{ (e^q + e^{-q})^{2a} \frac{p}{e^{qr} - p} + \frac{1}{2} \binom{2a}{a} + \sum_{n=1}^a \binom{2a}{n+a} e^{-2nq} \right\} [r \geq 2a] \quad (\text{V, 72}).$$

$$12) \int \frac{\cos^{2a+1} x}{1-2p \cos rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{2a+1} q (1-p^2)} \left\{ (e^q + e^{-q})^{2a+1} \frac{p}{e^{qr} - p} + \sum_{n=0}^a \binom{2a+1}{n+a+1} e^{-(2n+1)q} \right\} [r \geq 2a+1] \quad (\text{V, 73}).$$

$$13) \int \frac{1}{1-2p \cos rx + p^2} \frac{dx}{4q^4 + x^4} = \frac{\pi}{8q^2(1-p^2)} \frac{1+2pe^{-qr} \sin qr - p^2 e^{-2qr}}{1-2pe^{-qr} \cos qr + p^2 e^{-2qr}} \quad (\text{H, 96}).$$

$$14) \int \frac{1}{1-2p \cos rx + p^2} \frac{x^2 dx}{4q^4 + x^4} = \frac{\pi}{4q(1-p^2)} \frac{1-2pe^{-qr} \sin qr - p^2 e^{-2qr}}{1-2pe^{-qr} \cos qr + p^2 e^{-2qr}} \quad (\text{H, 96}).$$

$$15) \int \frac{\sin rx}{1-2p \cos rx + p^2} \frac{x dx}{4q^4 + x^4} = \frac{\pi}{4q^2} \frac{e^{-qr} \sin qr}{1-2pe^{-qr} \cos qr + p^2 e^{-2qr}} \quad (\text{H, 98}).$$

$$16) \int \frac{\sin rx}{1-2p \cos rx + p^2} \frac{x^3 dx}{4q^4 + x^4} = \frac{\pi}{2} \frac{e^{-qr} \cos qr}{1-2pe^{-qr} \cos qr + p^2 e^{-2qr}} \quad (\text{H, 94}).$$

$$17) \int \frac{\sin rx}{1-2p \cos rx + p^2} \frac{x dx}{4q^4 + x^4} = \frac{\pi}{4q^2} \frac{p^{s+1}(1-e^{-2qr})e^{-qr} \sin qr - pe^{-(s+1)qr} \sin \{(s+1)qr\} + (1+p^2)e^{-(s+2)qr} \sin s qr - pe^{-(s+2)qr} \sin \{(s-1)qr\}}{1-2pe^{-qr} \cos qr + p^2 e^{-2qr}} \quad (\text{H, 96}).$$

$$18) \int \frac{\sin rx}{1-2p \cos rx + p^2} \frac{x^3 dx}{4q^4 + x^4} = \frac{\pi}{2} \frac{1}{1-2pe^{-qr} \cos qr + p^2 e^{-2qr}} \left\{ e^{-qr} \frac{1-p^{s-1}}{1-p} + (p^{s+1} e^{-qr} \cos qr - p^s e^{-2qr})(1-e^{-2qr}) - pe^{-(s+1)qr} \cos \{(s+1)qr\} + (1+p^2)e^{-(s+2)qr} \cos s qr - pe^{-(s+2)qr} \cos \{(s-1)qr\} \right\} \quad (\text{H, 96}).$$

$$19) \int \frac{\cos rx}{1-2p \cos rx + p^2} \frac{dx}{4q^4 + x^4} = \frac{\pi}{8q^2(1-p^2)} \frac{p(1-e^{-2qr}) + (1-p^2)e^{-qr} \cos qr + (1+p^2)e^{-qr} \sin qr}{1-2pe^{-qr} \cos qr + p^2 e^{-2qr}} \quad (\text{H, 96}).$$

$$20) \int \frac{\cos rx}{1-2p \cos rx + p^2} \frac{x^2 dx}{4q^4 + x^4} = \frac{\pi}{4q(1-p^2)} \frac{p(1-e^{-2qr}) + (1-p^2)e^{-qr} \cos qr - (1+p^2)e^{-qr} \sin qr}{1-2pe^{-qr} \cos qr + p^2 e^{-2qr}} \quad (\text{H, 96}).$$

$$21) \int \frac{\cos rx}{1-2p \cos rx + p^2} \frac{dx}{4q^4 + x^4} = \frac{\pi}{8q^2} \frac{1}{1-2pe^{-qr} \cos qr + p^2 e^{-2qr}} \left\{ \frac{p}{1-p^2} \frac{1-p^{s-1}}{1-p} (1+2pe^{-qr} \sin qr - p^2 e^{-2qr}) + \frac{p^{s+1} e^{-qr} (\cos qr + \sin qr) - p^s e^{-2qr}}{p^2 - 2pe^{-qr} \cos qr + e^{-2qr}} - pe^{-(s+1)qr} [\cos \{(s+1)qr\} + \sin \{(s+1)qr\}] + (1+p^2)e^{-(s+2)qr} \{\cos s qr + \sin s qr\} - pe^{-(s+2)qr} [\cos \{(s-1)qr\} + \sin \{(s-1)qr\}]] \right\} \quad (\text{H, 97}).$$

F. Alg. rat. fract. à dén. bin. $q^a + x^a$; $[p^2 < 1]$. TABLE 192, suite.
Circ. Dir. en dén. trin. et un fact. au num.;

Lim. 0 et ∞ .

$$22) \int \frac{\cos rx}{1-2p \cos rx + p^2} \frac{x^2 dx}{4q^4 + x^4} = \frac{\pi}{4q} \frac{1}{1-2p e^{-qr} \cos qr + p^2 e^{-2qr}} \left\{ \frac{p}{1-p^2} \frac{1-p^{2-1}}{1-p} \right. \\ (1-2p e^{-qr} \sin qr - p^2 e^{-2qr}) + \frac{\{p^{s+1} e^{-qr} (\cos qr - \sin qr) - p^2 e^{-2qr}\} (1-e^{-2qr}) -}{p^2 -} \\ \left. - p e^{-(s+1)qr} [\cos \{(s+1)qr\} - \sin \{(s+1)qr\}] + (1+p^2) e^{-(s+2)qr} (\cos sqr - \sin sqr) - \right. \\ \left. - 2p e^{-qr} \cos qr + \right. \\ \left. - p e^{-(s+2)qr} [\cos \{(s-1)qr\} - \sin \{(s-1)qr\}] \right\} \quad (\text{H, 97}).$$

$$23) \int \frac{\sin rx}{1-2p \cos rx + p^2} \frac{x dx}{1+x^2} = \frac{\pi}{2a} \frac{e^{-r}}{1-p e^{-r}} - \frac{\pi}{a} \sum_1^{\frac{1}{2}(a-1)} e^{-r \cos \frac{n\pi}{a}} \frac{\cos \frac{2n\pi}{a} \cdot \cos \left(r \sin \frac{n\pi}{a}\right) -}{1-2p e^{-r \cos \frac{n\pi}{a}} \cos \left(r \sin \frac{n\pi}{a}\right) +} \\ \frac{-p e^{-r \cos \frac{n\pi}{a}}}{+ p^2 e^{-2r \cos \frac{n\pi}{a}}} - \frac{\pi}{a} \sum_1^{\frac{1}{2}(a-1)} e^{-r \cos \frac{n\pi}{a}} \frac{\sin \frac{2n\pi}{a} \cdot \sin \left(r \sin \frac{n\pi}{a}\right)}{1-2p e^{-r \cos \frac{n\pi}{a}} \cos \left(r \sin \frac{n\pi}{a}\right) + p^2 e^{-2r \cos \frac{n\pi}{a}}} \left[\begin{matrix} a \\ \text{impair} \end{matrix} \right], = \\ = \frac{\pi}{a} \sum_1^{\frac{1}{2}a-1} \cos \left(\frac{2n+1}{a} \pi\right) \frac{e^{-r \cos \left(\frac{2n+1}{2a} \pi\right)} \cos \left\{r \sin \left(\frac{2n+1}{2a} \pi\right)\right\} - p e^{-2r \cos \left(\frac{2n+1}{2a} \pi\right)}}{1-2p e^{-r \cos \left(\frac{2n+1}{2a} \pi\right)} \cos \left\{r \sin \left(\frac{2n+1}{2a} \pi\right)\right\} + p^2 e^{-2r \cos \left(\frac{2n+1}{2a} \pi\right)}} + \\ + \frac{\pi}{a} \sum_1^{\frac{1}{2}a-1} e^{-r \cos \left(\frac{2n+1}{2a} \pi\right)} \frac{\sin \left\{r \sin \left(\frac{2n+1}{2a} \pi\right)\right\} \cdot \sin \left(\frac{2n+1}{a} \pi\right)}{1-2p e^{-r \cos \left(\frac{2n+1}{2a} \pi\right)} \cos \left\{r \sin \left(\frac{2n+1}{2a} \pi\right)\right\} + p^2 e^{-2r \cos \left(\frac{2n+1}{2a} \pi\right)}} \left[\begin{matrix} a \\ \text{pair} \end{matrix} \right] \quad (\text{IV, 301}).$$

F. Alg. rat. fract. à dén. bin. $q^a - x^a$; $[p^2 < 1]$. TABLE 193.
Circ. Dir. en dén. trin. et un fact. au num.;

Lim. 0 et ∞ .

$$1) \int \frac{1}{1-2p \cos rx + p^2} \frac{dx}{q^2 - x^2} = \frac{p\pi}{q(1-p^2)} \frac{\sin qr}{1-2p \cos qr + p^2} \quad (\text{VIII, 504}).$$

$$2) \int \frac{\sin rx}{1-2p \cos rx + p^2} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \frac{p - \cos qr}{1-2p \cos qr + p^2} \quad (\text{VIII, 505}).$$

$$3) \int \frac{\sin rx}{1-2p \cos 2rx + p^2} \frac{x dx}{q^2 - x^2} = \frac{\pi p - 1}{2p + 1} \frac{\cos qr}{1-2p \cos 2qr + p^2} \quad (\text{VIII, 538}).$$

$$4) \int \frac{\sin sx}{1-2p \cos rx + p^2} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2(1-p^2)} \frac{-(1-p^2) \cos qr + 2p^{d+1} \cos \{(dr+r-s)q\} - 2p^{d+1} \cos \{(s-dr)q\}}{1-2p \cos qr + p^2} [s \text{ fract.}], = -\frac{\pi p^d}{4(1-p^2)} - \frac{\pi}{4} \frac{p^d - \cos qr}{1-2p \cos qr + p^2} [s \text{ entier}];$$

$$\left[d = \mathcal{L} \frac{s}{r} \right] \text{ (VIII, 504).}$$

$$5) \int \frac{\sin sx}{1-2p \cos rx + p^2} \frac{s dx}{q^2 - x^2} = \frac{\pi}{2} \frac{p^d - \cos qr}{1-2p \cos qr + p^2} \text{ (H, 134).}$$

$$6) \int \frac{\cos rx}{1-2p \cos rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \frac{1+p^2}{1-p^2} \frac{\sin qr}{1-2p \cos qr + p^2} \text{ (VIII, 504).}$$

$$7) \int \frac{\cos rx}{1-2p \cos 2rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2p} \frac{1+p}{1-p} \frac{\sin qr}{1-2p \cos 2qr + p^2} \text{ (VIII, 537).}$$

$$8) \int \frac{\cos sx}{1-2p \cos rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q(1-p^2)} \frac{(1-p^2) \sin qs + 2p^{d+1} \sin \{(dr+r-s)q\} + 2p^{d+1} \sin \{(s-dr)q\}}{1-2p \cos qr + p^2} \left[d = \mathcal{L} \frac{s}{r} \right] \text{ (VIII, 504).}$$

$$9) \int \frac{\cos sx}{1-2p \cos rx + p^2} \frac{ds}{q^2 - s^2} = \frac{\pi}{2q(1-p^2)} \frac{(1-p^2) \sin s qr + 2p^{d+1} \sin qr}{1-2p \cos qr + p^2} \text{ (H, 134).}$$

$$10) \int \frac{1}{1-2p \cos rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{4q^2(1-p^2)} \left\{ \frac{2p \sin qr}{1-2p \cos qr + p^2} + \frac{1+p e^{-qr}}{1-p e^{-qr}} \right\} \text{ (H, 135*)}.$$

$$11) \int \frac{1}{1-2p \cos rx + p^2} \frac{x^2 dx}{q^2 - x^2} = \frac{\pi}{4q(1-p^2)} \left\{ \frac{2p \sin qr}{1-2p \cos qr + p^2} - \frac{1+p e^{-qr}}{1-p e^{-qr}} \right\} \text{ (H, 135*)}.$$

$$12) \int \frac{\sin rx}{1-2p \cos rx + p^2} \frac{x dx}{q^2 - x^2} = \frac{\pi}{4q^2} \left\{ \frac{p - \cos qr}{1-2p \cos qr + p^2} + \frac{e^{-qr}}{1-p e^{-qr}} \right\} \text{ (H, 135).}$$

$$13) \int \frac{\sin rx}{1-2p \cos rx + p^2} \frac{x^3 dx}{q^2 - x^2} = \frac{\pi}{4} \left\{ \frac{p - \cos qr}{1-2p \cos qr + p^2} - \frac{e^{-qr}}{1-p e^{-qr}} \right\} \text{ (H, 135).}$$

$$14) \int \frac{\sin sx}{1-2p \cos rx + p^2} \frac{x dx}{q^2 - x^2} = \frac{\pi}{4q^2} \left\{ \frac{e^{-sqr} - p^d}{(1-p e^{-qr})(1-p e^{qr})} + \frac{p^d - \cos s qr}{1-2p \cos qr + p^2} \right\} \text{ (H, 136).}$$

$$15) \int \frac{\sin sx}{1-2p \cos rx + p^2} \frac{x^3 dx}{q^2 - x^2} = \frac{\pi}{4} \left\{ \frac{p^d - \cos s qr}{1-2p \cos qr + p^2} + \frac{p^d - e^{-sqr}}{(1-p e^{-qr})(1-p e^{qr})} \right\} \text{ (H, 136).}$$

$$16) \int \frac{\cos rx}{1-2p \cos rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{4q^2(1-p^2)} \left\{ \frac{(1+p^2) \sin qr}{1-2p \cos qr + p^2} + \frac{p + e^{-qr}}{1-p e^{-qr}} \right\} \text{ (H, 135*)}.$$

$$17) \int \frac{\cos rx}{1-2p \cos rx + p^2} \frac{x^2 dx}{q^2 - x^2} = \frac{\pi}{4q(1-p^2)} \left\{ \frac{(1+p^2) \sin qr}{1-2p \cos qr + p^2} - \frac{p + e^{-qr}}{1-p e^{-qr}} \right\} \text{ (H, 135*)}.$$

F. Alg. rat. fract. à dén. bin. $q^2 - s^2$; $[p^2 < 1]$. TABLE 193, suite.
Circ. Dir. en dén. trin. et un fact. au num.;

Lim. 0 et ∞ .

$$18) \int \frac{\cos rx}{1 - 2p \cos rx + p^2} \frac{dx}{q^2 - s^2} = \frac{\pi}{4q^2(1-p^2)} \left\{ \frac{(1-p^2)\sigma^{-sqr} - p^{s+1}(\sigma^{qr} - \sigma^{-qr})}{(1-p\sigma^{qr})(1-p\sigma^{-qr})} + \frac{(1-p^2)\sin sqr + 2p^{s+1}\sin qr}{1 - 2p \cos qr + p^2} \right\} \text{ (H, 136).}$$

$$19) \int \frac{\cos rx}{1 - 2p \cos rx + p^2} \frac{x^2 dx}{q^2 - s^2} = \frac{\pi}{4q(1-p^2)} \left\{ \frac{(1-p^2)\sin sqr + 2p^{s+1}\sin qr}{1 - 2p \cos qr + p^2} - \frac{(1-p^2)\sigma^{-sqr} - p^{s+1}(\sigma^{qr} - \sigma^{-qr})}{(1-p\sigma^{qr})(1-p\sigma^{-qr})} \right\} \text{ (H, 136).}$$

F. Alg. rat. fract. à dén. bin. $q^2 + s^2$; $[p^2 < 1]$. TABLE 194.
Circ. Dir. en dén. trin. et deux fact. au num.;

Lim. 0 et ∞ .

$$1) \int \frac{\sin rx \cdot \sin sx}{1 - 2p \cos rx + p^2} \frac{dx}{q^2 + s^2} = \frac{\pi}{4q} \frac{(\sigma^{qr} - \sigma^{-qr})\sigma^{-qs} + p^d(\sigma^{(s-d)r-r)s} - \sigma^{(dr+r-s)s})}{1 - p^{d+1}(\sigma^{(s-d)r}s - \sigma^{(dr-s)s})} \left[d = \mathcal{L} \frac{s}{r} \right] \text{ (VIII, 495).}$$

$$2) \int \frac{\sin rx \cdot \sin sx}{1 - 2p \cos rx + p^2} \frac{dx}{q^2 + s^2} = \frac{\pi}{4q} \frac{1}{(1-p\sigma^{qr})(1-p\sigma^{-qr})} \left\{ \frac{p^{s+1}}{1-p^2} (p^s - p^{-s})(\sigma^{qr} - \sigma^{-qr}) - \sigma^{-sqr}(\sigma^{qr} - \sigma^{-qr}) \right\} [t > s] \text{ (H, 92).}$$

$$3) \int \frac{\sin rx \cdot \sin sx}{1 - 2p \cos 2rx + p^2} \frac{dx}{q^2 + s^2} = \frac{\pi}{4q(1+p)} \frac{\sigma^{-qs}(1+p)(\sigma^{qr} - \sigma^{-qr}) + p^d(\sigma^{(s-2dr-r)s} - \sigma^{(2dr+r-s)s})}{1 - p^{d+1}(\sigma^{(s-2dr+r)s} - \sigma^{(2dr-r-s)s})} \left[d = \mathcal{L} \frac{s}{2r} \right] \text{ (VIII, 537).}$$

$$4) \int \frac{\sin rx \cdot \cos sx}{1 - 2p \cos rx + p^2} \frac{x dx}{q^2 + s^2} = \frac{\pi}{4} \frac{(\sigma^{qr} - \sigma^{-qr})\sigma^{-qs} + p^d(\sigma^{(s-dr-r)s} + \sigma^{(dr+r-s)s})}{1 - p^{d+1}(\sigma^{(s-dr)s} + \sigma^{(dr-s)s})} [s \text{ fractionn.}], = \frac{(\sigma^{qr} - \sigma^{-qr})\sigma^{-qs} - (1-p^2)p^{d-1}}{1 - (\sigma^{qr} + \sigma^{-qr})p + p^2} [s \text{ entier}];$$

$$\left[d = \mathcal{L} \frac{s}{r} \right] \text{ (VIII, 495).}$$

$$5) \int \frac{\sin sx \cdot \cos rx}{1 - 2p \cos rx + p^2} \frac{x dx}{q^2 + s^2} = \frac{\pi}{4(1-p^2)} \frac{2(1-p^2)\sigma^{-qs}(\sigma^{qr} + \sigma^{-qr}) - (1+p^2)}{1 - p^d(\sigma^{(s-dr-r)s} + \sigma^{(dr+r-s)s}) + (1+p^2)p^{d+1}(\sigma^{(s-dr)s} + \sigma^{(dr-s)s})} [s \text{ fractionn.}], =$$

$$= \frac{\pi}{4} \frac{2\sigma^{-qs}(\sigma^{qr} + \sigma^{-qr}) - (1+p^2)p^{d-1}}{1 - (\sigma^{qr} + \sigma^{-qr})p + p^2} [s \text{ entier}]; \left[d = \mathcal{L} \frac{s}{r} \right] \text{ (VIII, 494).}$$

$$6) \int \frac{\sin rx \cdot \cos sx}{1 - 2p \cos rx + p^2} \frac{x dx}{q^2 + s^2} = \frac{\pi \{ \sigma^{-sqr}(\sigma^{qr} + \sigma^{-qr}) - p^s(p^s + p^{-s}) \}}{4(1-p\sigma^{qr})(1-p\sigma^{-qr})} [t > s], =$$

$$= \frac{\pi \{ \sigma^{-sqr}(\sigma^{qr} - \sigma^{-qr}) + p^s(p^s - p^{-s}) \}}{4(1-p\sigma^{qr})(1-p\sigma^{-qr})} [t < s] \text{ (H, 92).}$$

$$7) \int \frac{\sin rx \cdot \cos sx}{1 - 2p \cos 2rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{\pi}{8(1+p)} \frac{2\sigma^{-q^2}(1+p)(\sigma^{-qr} - \sigma^{qr}) + p^{1(d-1)}(1-p^2)}{1 - \frac{[1 - (-1)^d] + p^{1d}[1 + (-1)^d](\sigma^{qr} + \sigma^{-qr})(1-p)}{-(\sigma^{2qr} + \sigma^{-2qr})p + p^2}} \left[\begin{smallmatrix} s \\ \text{entier} \end{smallmatrix} \right], = \frac{\pi}{4(1+p)} \frac{\sigma^{-q^2}(1+p)}{1 - \frac{(\sigma^{-qr} - \sigma^{qr}) + p^d(\sigma^{(s-2dr-r)q} - \sigma^{(2dr+r-s)q}) - p^{d+1}(\sigma^{(s-2dr+r)q} - \sigma^{(2dr-r-s)q})}{-(\sigma^{2qr} + \sigma^{-2qr})p + p^2}}$$

$$\left[\begin{smallmatrix} s \\ \text{fract.} \end{smallmatrix} \right]; \left[d = \mathcal{L} \frac{s}{2r} \right] \text{ (VIII, 537).}$$

$$8) \int \frac{\sin sx \cdot \cos rx}{1 - 2p \cos 2rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{\pi}{4(1-p)} \frac{2(1-p)\sigma^{-q^2}(\sigma^{qr} + \sigma^{-qr}) - p^d(\sigma^{(s-2dr-r)q} + \sigma^{(2dr-r-s)q}) - p^{d+1}(\sigma^{(s-2dr+r)q} + \sigma^{(2dr-r-s)q})}{-(\sigma^{2qr} + \sigma^{-2qr})p + p^2} \left[\begin{smallmatrix} s \\ \text{fract.} \end{smallmatrix} \right], = \frac{\pi}{8} \frac{4\sigma^{-q^2}(\sigma^{qr} + \sigma^{-qr}) - (1+p)p^{1(d-1)}\{1 + (-1)^d\} - (\sigma^{qr} + \sigma^{-qr})p^{1d}\{1 + (-1)^{d+1}\}}{-(\sigma^{2qr} + \sigma^{-2qr})p + p^2} \left[\begin{smallmatrix} s \\ \text{entier} \end{smallmatrix} \right]; \left[d = \mathcal{L} \frac{s}{2r} \right]$$

(VIII, 537).

$$9) \int \frac{\cos rx \cdot \cos sx}{1 - 2p \cos rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{4q(1-p^2)} \frac{2(1-p^2)\sigma^{-q^2}(\sigma^{qr} + \sigma^{-qr}) + (1+p^2)r^d}{1 - \frac{(\sigma^{(s-dr-r)q} - \sigma^{(dr+r-s)q}) - (1+p^2)p^{d+1}(\sigma^{(s-dr)q} - \sigma^{(dr-s)q})}{-(\sigma^{qr} + \sigma^{-qr})p + p^2}} \left[d = \mathcal{L} \frac{s}{r} \right] \text{ (VIII, 494).}$$

$$10) \int \frac{\cos tx \cdot \cos sx}{1 - 2p \cos rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} \frac{1}{(1-p\sigma^{-qr})(1-p\sigma^{qr})} \left\{ \sigma^{-sqr}(\sigma^{qr} + \sigma^{-qr}) - \frac{p^{t+1}}{1-p^2}(p^t + p^{-t})(\sigma^{qr} - \sigma^{-qr}) \right\} [t > s] \text{ (H, 92).}$$

$$11) \int \frac{\cos rx \cdot \cos sx}{1 - 2p \cos 2rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{4q(1-p)} \frac{2(1-p)\sigma^{-q^2}(\sigma^{qr} + \sigma^{-qr}) + p^d(\sigma^{(s-2dr-r)q} - \sigma^{(2dr+r-s)q}) - p^{d+1}(\sigma^{(s-2dr+r)q} - \sigma^{(2dr-r-s)q})}{-(\sigma^{2qr} + \sigma^{-2qr})p + p^2} \left[d = \mathcal{L} \frac{s}{2r} \right] \text{ (VIII, 536).}$$

$$12) \int \frac{\sin^{2a} x \cdot \sin rx}{1 - 2p \cos rx + p^2} \frac{dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} \frac{(\sigma^q - \sigma^{-q})^{2a}}{\sigma^{qr} - p} [r > 2a], = \frac{(-1)^a \pi}{2^{2a+1}} \left\{ \frac{(\sigma^q - \sigma^{-q})^{2a}}{\sigma^{2aq} - p} - 1 \right\} [r = 2a] \text{ (V, 73).}$$

$$13) \int \frac{\sin^{2a} x \cdot \sin rx}{1 - 2p \cos 2rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}(1+p)} (\sigma^q - \sigma^{-q})^{2a} \frac{\sigma^{qr}}{\sigma^{2qr} - p} [r > 2a], = \frac{(-1)^a \pi}{2^{2a+1}(1+p)} \left\{ (\sigma^q - \sigma^{-q})^{2a} \frac{\sigma^{qr}}{\sigma^{2qr} - p} - 1 \right\} [r = 2a] \text{ (V, 89).}$$

$$\begin{aligned}
14) \int \frac{\sin^2 x \cdot \sin s x}{1 - 2p \cos r x + p^2} \frac{x dx}{q^2 + x^2} &= \frac{(-1)^a \pi}{2^{2a+1}(1-p^2)} (e^q - e^{-q})^{2a} \frac{e^{(r-s)q} - p e^{sq}}{e^{qr} - p} [2s > 4a < r], = \\
&= \frac{(-1)^a \pi}{2^{2a+1}(1-p^2)} \left\{ (e^q - e^{-q})^{2a} \frac{e^{(r-s)q} - p e^{sq}}{e^{qr} - p} - e^{(2a-s)q} \sum_0^{d-1} (-1)^n \binom{2a}{n} e^{-2nq} - e^{(s-2a)q} \right. \\
&\quad \left. \sum_0^d (-1)^n \binom{2a}{n} e^{2nq} \right\} [r > 2s < 4a, \text{entier}], = \frac{(-1)^a \pi}{2^{2a+1}(1-p^2)} \left\{ (e^q - e^{-q})^{2a} \frac{e^{(r-s)q} - p e^{sq}}{e^{qr} - p} - \right. \\
&\quad \left. - e^{(2a-s)q} \sum_0^d (-1)^n \binom{2a}{n} e^{-2nq} - e^{(s-2a)q} \sum_0^d (-1)^n \binom{2a}{n} e^{2nq} \right\} [r > 2s < 4a, \text{fract.}], = \\
&= \frac{(-1)^a \pi}{2^{2a+1}(1-p^2)} \left[(e^q - e^{-q})^{2a} \left\{ e^{-sq} - p \frac{e^{sq} - e^{-sq}}{e^{(s+2a)q} - p} \right\} + p \right] [2r - 4a = 2s > r > 4a], = \\
&= \frac{(-1)^a \pi}{2^{2a+1}(1-p^2)} \left\{ (e^q - e^{-q})^{2a} \left\{ e^{-sq} - p \frac{e^{sq} - e^{-sq}}{e^{(s+2a)q} - p} \right\} + p - e^{(2a-s)q} \sum_0^{d-1} (-1)^n \binom{2a}{n} e^{-2nq} - \right. \\
&\quad \left. - e^{(s-2a)q} \sum_0^d (-1)^n \binom{2a}{n} e^{2nq} \right\} [2r - 4a = 2s < r < 4a, \text{entier}], = \frac{(-1)^a \pi}{2^{2a+1}(1-p^2)} \\
&\quad \left\{ (e^q - e^{-q})^{2a} \left\{ e^{-sq} - p \frac{e^{sq} - e^{-sq}}{e^{(s+2a)q} - p} \right\} + p - e^{(2a-s)q} \sum_0^{d-1} (-1)^n \binom{2a}{n} e^{-2nq} - e^{(s-2a)q} \sum_0^d (-1)^n \binom{2a}{n} e^{2nq} \right\} \\
&\quad \left. \left\{ e^{(2a)q} \right\} [2r - 4a = 2s < r < 4a, \text{fractionn.}]; \left[\text{partout } d = \mathcal{L} \left(a - \frac{1}{2}s \right) \right]; = \frac{(-1)^a \pi}{2^{2a+1}(1-p^2)} \right. \\
&\quad (e^q - e^{-q})^{2a} \left\{ e^{(r-s)q} \left(\frac{1}{e^{qr} - p} + p \right) - e^{(s-r)q} \frac{p^2}{e^{qr} - p} \right\} \left[r + 2a < s < 6a < \frac{3}{2}r \right], = \\
&= \frac{(-1)^a \pi}{2^{2a+1}(1-p^2)} \left\{ (e^q - e^{-q})^{2a} \left\{ e^{(r-s)q} \left(\frac{1}{e^{qr} - p} + p \right) - e^{(s-r)q} \frac{p^2}{e^{qr} - p} \right\} - p e^{(2a+r-s)q} \right. \\
&\quad \left. \sum_0^{d-1} (-1)^n \binom{2a}{n} e^{-2nq} - p e^{(s-r-2a)q} \sum_0^d (-1)^n \binom{2a}{n} e^{2nq} \right\} [r + 2a > s < 2(r-a), \\
&\quad 2s < 3r, s-r \text{ entier}], = \frac{(-1)^a \pi}{2^{2a+1}(1-p^2)} \left\{ (e^q - e^{-q})^{2a} \left\{ e^{(r-s)q} \left(\frac{1}{e^{qr} - p} + p \right) - e^{(s-r)q} \frac{p^2}{e^{qr} - p} \right\} - \right. \\
&\quad \left. - p e^{(2a+r-s)q} \sum_0^{d-1} (-1)^n \binom{2a}{n} e^{-2nq} - p e^{(s-r-2a)q} \sum_0^d (-1)^n \binom{2a}{n} e^{2nq} \right\} [r + 2a > s < 2(r-a), \\
&\quad 2s < 3r, s-r \text{ fractionn.}], = \frac{(-1)^a \pi}{2^{2a+1}(1-p^2)} \left\{ (e^q - e^{-q})^{2a} \left\{ p e^{(r-s)q} \frac{e^{qr} - 2p}{e^{qr} - p} + \frac{e^{(s-r)q}}{e^{qr} - p} \right\} + p^2 \right\} \\
&\quad [s = 2(r-a) > 6a], = \frac{(-1)^a \pi}{2^{2a+1}(1-p^2)} \left\{ (e^q - e^{-q})^{2a} \left\{ p e^{(r-s)q} \frac{e^{qr} - 2p}{e^{qr} - p} + \frac{e^{(s-r)q}}{e^{qr} - p} \right\} + \right. \\
&\quad \left. + p^2 - p e^{(2a+r-s)q} \sum_0^{d-1} (-1)^n \binom{2a}{n} e^{-2nq} - p e^{(s-r-2a)q} \sum_0^d (-1)^n \binom{2a}{n} e^{2nq} \right\} [s = 2(r-a) < 6a, \\
&\quad s-r \text{ entier}], = \frac{(-1)^a \pi}{2^{2a+1}(1-p^2)} \left\{ (e^q - e^{-q})^{2a} \left\{ p e^{(r-s)q} \frac{e^{qr} - 2p}{e^{qr} - p} + \frac{e^{(s-r)q}}{e^{qr} - p} \right\} + p^2 - p e^{(2a+r-s)q} \right.
\end{aligned}$$

$$\sum_0^d (-1)^n \binom{2a}{n} \sigma^{-2nq} - p e^{(s-r-2a)q} \sum_0^d (-1)^n \binom{2a}{n} \sigma^{2nq} \left\{ [s=2(r-a) < 6a, s-r \text{ fractionn.}] ; \right. \\ \left[\text{partout } d = \mathcal{L} \frac{1}{2} (2a-r-s) \right] ; = \frac{(-1)^a \pi}{2^{2a+1} (1-p^2)} (\sigma^q - \sigma^{-q})^{2a} \frac{\sigma^{(r-s)q} - p \sigma^{sq}}{\sigma^{qr} - p} \left[r-2a > s > \right. \\ \left. > 2a < \frac{1}{2} r \right], = \frac{(-1)^a \pi}{2^{2a+1} (1-p^2)} \left\{ (\sigma^q - \sigma^{-q})^{2a} \frac{\sigma^{(r-s)q} - p \sigma^{sq}}{\sigma^{qr} - p} + p e^{(2a+s-r)q} \sum_0^{d-1} (-1)^n \binom{2a}{n} \sigma^{-2nq} \right. \\ \left. + p e^{(r-s-2a)q} \sum_0^d (-1)^n \binom{2a}{n} \sigma^{2nq} \right\} [r-2a < s > 2a, 2s > r, s-r \text{ entier}], = \\ = \frac{(-1)^a \pi}{2^{2a+1} (1-p^2)} \left\{ (\sigma^q - \sigma^{-q})^{2a} \frac{\sigma^{(r-s)q} - p \sigma^{sq}}{\sigma^{qr} - p} + p e^{(2a+s-r)q} \sum_0^d (-1)^n \binom{2a}{n} \sigma^{-2nq} + \right. \\ \left. + p e^{(r-s-2a)q} \sum_0^d (-1)^n \binom{2a}{n} \sigma^{2nq} \right\} [r-2a < s > 2a, 2s > r, s-r \text{ fractionn.}], = \frac{(-1)^a \pi}{2^{2a+1} (1-p^2)} \\ \left\{ (\sigma^q - \sigma^{-q})^{2a} \left\{ \sigma^{(s-r)q} \left(\frac{1}{\sigma^{qr} - p} - p \right) - \sigma^{(r-s)q} \frac{p^2}{\sigma^{qr} - p} \right\} - 1 \right\} \left[s=2a < \frac{1}{2} r \right], = \frac{(-1)^a \pi}{2^{2a+1} (1-p^2)} \\ \left\{ (\sigma^q - \sigma^{-q})^{2a} \left\{ \sigma^{(s-r)q} \left(\frac{1}{\sigma^{qr} - p} - p \right) - \sigma^{(r-s)q} \frac{p^2}{\sigma^{qr} - p} \right\} - 1 + p e^{(2a+s-r)q} \sum_0^{d-1} (-1)^n \binom{2a}{n} \sigma^{-2nq} \right. \\ \left. + p e^{(r-s-2a)q} \sum_0^d (-1)^n \binom{2a}{n} \sigma^{2nq} \right\} \left[s=2a > \frac{1}{2} r, s-r \text{ entier} \right], = \frac{(-1)^a \pi}{2^{2a+1} (1-p^2)} \\ \left\{ (\sigma^q - \sigma^{-q})^{2a} \left\{ \sigma^{(s-r)q} \left(\frac{1}{\sigma^{qr} - p} - p \right) - \sigma^{(r-s)q} \frac{p^2}{\sigma^{qr} - p} \right\} - 1 + p e^{(2a+s-r)q} \sum_0^d (-1)^n \binom{2a}{n} \sigma^{-2nq} \right. \\ \left. + p e^{(r-s-2a)q} \sum_0^d (-1)^n \binom{2a}{n} \sigma^{2nq} \right\} \left[s=2a > \frac{1}{2} r, s-r \text{ fractionn.} \right]; \\ \left[\text{partout } d = \mathcal{L} \frac{1}{2} (2a+s-r) \right] \text{ (V, 74, 75, 82, 83).}$$

$$15) \int \frac{\sin^{2a+1} x \cdot \cos rx}{1-2p \cos 2rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1} (1-p^2)} \left\{ p e^{-(2a+1)q} \left\{ (1 - \sigma^{(2a+1)2q}) (1 - \sigma^{-2q})^{2a+1} - \right. \right. \\ \left. - 2 \sum_0^a (-1)^n \binom{2a+1}{n} \sigma^{2nq} \right\} + (\sigma^q - \sigma^{-q})^{2a+1} \frac{1+p^2}{\sigma^{qr} - p} \right\} [r > 2a+1], = \\ = \frac{(-1)^{a-1} \pi}{2^{2a+1} (1-p^2)} \left\{ (1+p^2) \left\{ \frac{(\sigma^q - \sigma^{-q})^{2a+1}}{e^{(2a+1)q} - p} - 1 \right\} + p e^{-(2a+1)q} \left\{ (1 - \sigma^{(2a+1)2q}) \right. \right. \\ \left. \left. (1 - \sigma^{-2q})^{2a+1} - 2 \sum_0^a (-1)^n \binom{2a+1}{n} \sigma^{2nq} \right\} \right\} [r=2a+1] \text{ (V, 73).}$$

$$16) \int \frac{\sin^{2a+1} x \cdot \cos rx}{1-2p \cos 2rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1} (1-p)} (\sigma^q - \sigma^{-q})^{2a+1} \frac{e^{qr}}{\sigma^{2qr} - p} [r > 2a+1], = \\ = \frac{(-1)^{a-1} \pi}{2^{2a+1} (1-p)} \left\{ (\sigma^q - \sigma^{-q})^{2a+1} \frac{e^{qr}}{\sigma^{2qr} - p} - 1 \right\} [r=2a+1] \text{ (V, 89).}$$

$$\begin{aligned}
17) \int \frac{\sin^{2a+1} x \cdot \cos x}{1 - 2p \cos r x + p^2} \frac{x dx}{q^2 + x^2} &= \frac{(-1)^{a-1}}{2^{2a+1}} \frac{\pi}{1-p^2} (e^r - e^{-r})^{2a+1} \frac{e^{(r-s)s} + p e^{rs}}{e^{qr} - p} [2s > 4a+2 < r], = \\
&= \frac{(-1)^{a-1}}{2^{2a+1}} \frac{\pi}{1-p^2} \left\{ (e^r - e^{-r})^{2a+1} \frac{e^{(r-s)s} + p e^{rs}}{e^{qr} - p} - e^{(2a+1-s)s} \sum_0^{d-1} (-1)^n \binom{2a+1}{n} e^{-2ns} - \right. \\
&\quad \left. - e^{(s-2a-1)s} \sum_0^d (-1)^n \binom{2a+1}{n} e^{2ns} \right\} [r > 2s < 4a+2, s \text{ entier}], = \frac{(-1)^{a-1}}{2^{2a+1}} \frac{\pi}{1-p^2} \\
&\quad \left\{ (e^r - e^{-r})^{2a+1} \frac{e^{(r-s)s} + p e^{rs}}{e^{qr} - p} - e^{(2a+1-s)s} \sum_0^{d-1} (-1)^n \binom{2a+1}{n} e^{-2ns} - e^{(s-2a-1)s} \sum_0^d (-1)^n \binom{2a+1}{n} e^{2ns} \right\} \\
&\quad [r > 2s < 4a+2, s \text{ fractionn.}], = \frac{(-1)^{a-1}}{2^{2a+1}} \frac{\pi}{1-p^2} \left\{ (e^r - e^{-r})^{2a+1} \left(e^{rs} + \right. \right. \\
&\quad \left. \left. + (e^{rs} + e^{-rs}) \frac{p}{e^{(s+2a+1)s} - p} \right) - p \right\} [4a+2 > r < 2s = 2r - 4a - 2], = \frac{(-1)^{a-1}}{2^{2a+1}} \frac{\pi}{1-p^2} \\
&\quad \left\{ (e^r - e^{-r})^{2a+1} \left(e^{rs} + (e^{rs} + e^{-rs}) \frac{p}{e^{(s+2a+1)s} - p} \right) - p - e^{(2a+1-s)s} \sum_0^{d-1} (-1)^n \binom{2a+1}{n} e^{-2ns} - \right. \\
&\quad \left. - e^{(s-2a-1)s} \sum_0^d (-1)^n \binom{2a+1}{n} e^{2ns} \right\} [2r - 4a - 2 = 2s < r < 4a+2, s \text{ entier}], = \\
&= \frac{(-1)^{a-1}}{2^{2a+1}} \frac{\pi}{1-p^2} \left\{ (e^r - e^{-r})^{2a+1} \left(e^{rs} + (e^{rs} + e^{-rs}) \frac{p}{e^{(s+2a+1)s} - p} \right) - p - e^{(2a+1-s)s} \sum_0^{d-1} (-1)^n \binom{2a+1}{n} e^{-2ns} - \right. \\
&\quad \left. - e^{(s-2a-1)s} \sum_0^d (-1)^n \binom{2a+1}{n} e^{2ns} \right\} [2r - 4a - 2 = 2s < r < 4a+2, s \text{ fractionn.}], \left[\text{partout } d = \int \frac{1}{2} (2a+1-s) \right]; = \frac{(-1)^{a-1}}{2^{2a+1}} \frac{\pi}{1-p^2} (e^r - e^{-r})^{2a+1} \\
&\quad \left\{ e^{(r-s)s} \left(\frac{1}{e^{qr} - p} + p \right) + e^{(s-r)s} \frac{p^2}{e^{qr} - p} \right\} \left[r + 2a + 1 < s < 6a + 3 < \frac{3}{2} r \right], = \frac{(-1)^{a-1}}{2^{2a+1}} \\
&\quad \frac{\pi}{1-p^2} \left\{ (e^r - e^{-r})^{2a+1} \left\{ e^{(r-s)s} \left(\frac{1}{e^{qr} - p} + p \right) + e^{(s-r)s} \frac{p^2}{e^{qr} - p} \right\} - p e^{(2a+1+r-s)s} \sum_0^{d-1} (-1)^n \binom{2a+1}{n} e^{-2ns} - \right. \\
&\quad \left. - p e^{(s-r-2a-1)s} \sum_0^d (-1)^n \binom{2a+1}{n} e^{2ns} \right\} [r + 2a + 1 > s < 2r - 2a - 1, \\
&\quad 2s > 3r, s - r \text{ entier}], = \frac{(-1)^{a-1}}{2^{2a+1}} \frac{\pi}{1-p^2} \left\{ (e^r - e^{-r})^{2a+1} \left\{ e^{(r-s)s} \left(\frac{1}{e^{qr} - p} + p \right) + \right. \right. \\
&\quad \left. \left. + e^{(s-r)s} \frac{p^2}{e^{qr} - p} \right\} - p e^{(2a+1+r-s)s} \sum_0^{d-1} (-1)^n \binom{2a+1}{n} e^{-2ns} - p e^{(s-r-2a-1)s} \sum_0^d (-1)^n \binom{2a+1}{n} e^{2ns} \right\} \\
&\quad [r + 2a + 1 > s < 2r - 2a - 1, 2s > 3r, s - r \text{ fractionn.}], = \frac{(-1)^{a-1}}{2^{2a+1}} \frac{\pi}{1-p^2} \\
&\quad \left\{ (e^r - e^{-r})^{2a+1} \left(p e^{(r-s)s} + \frac{p^2 e^{(s-r)s} + e^{(r-s)s}}{e^{qr} - p} \right) - p^2 \right\} [s = 2r - 2a - 1 < 6a + 3], =
\end{aligned}$$

$$\begin{aligned}
 &= \frac{(-1)^{a-1}}{2^{2a+1}} \frac{\pi}{1-p^2} \left\{ (e^q - e^{-q})^{2a+1} \left(p e^{(r-s)q} + \frac{p^2 e^{(s-r)q} + e^{(r-s)q}}{e^{qr} - p} \right) - p^2 - p e^{(2a+1+r-s)q} \right. \\
 &\quad \left. \sum_0^{d-1} (-1)^n \binom{2a+1}{n} e^{-2nq} - p e^{(s-r-2a-1)q} \sum_0^d (-1)^n \binom{2a+1}{n} e^{2nq} \right\} [s = 2r - 2a - \\
 &\quad - 1 < 6a + 3, s-r \text{ ent.}], = \frac{(-1)^{a-1}}{2^{2a+1}} \frac{\pi}{1-p^2} \left\{ (e^q - e^{-q})^{2a+1} \left(p e^{(r-s)q} + \frac{p^2 e^{(s-r)q} + e^{(r-s)q}}{e^{qr} - p} \right) - \right. \\
 &\quad \left. - p^2 - p e^{(2a+1+r-s)q} \sum_0^d (-1)^n \binom{2a+1}{n} e^{-2nq} - p e^{(s-r-2a-1)q} \sum_0^d (-1)^n \binom{2a+1}{n} e^{2nq} \right\} \\
 &\quad [s = 2r - 2a - 1 < 6a + 3, s-r \text{ fract.}]; \left[\text{partout } d = \mathcal{L} \frac{1}{2} (2a + 1 + r - s) \right]; = \frac{(-1)^{a-1}}{2^{2a+1}} \\
 &\quad \frac{\pi}{1-p^2} (e^q - e^{-q})^{2a+1} \frac{p e^{qs} + e^{(r-s)q}}{e^{qr} - p} \left[r - 2a - 1 > s > 2a + 1 < \frac{1}{2} r \right], = \frac{(-1)^{a-1}}{2^{2a+1}} \frac{\pi}{1-p^2} \\
 &\quad \left\{ (e^q - e^{-q})^{2a+1} \frac{p e^{qs} + e^{(r-s)q}}{e^{qr} - p} - p e^{(2a+1+s-r)q} \sum_0^{d-1} (-1)^n \binom{2a+1}{n} e^{-2nq} - p e^{(r-s-2a-1)q} \right. \\
 &\quad \left. \sum_0^d (-1)^n \binom{2a+1}{n} e^{2nq} \right\} [r - 2a - 1 < s > 2a + 1, 2s > r, s-r \text{ entier}], = \frac{(-1)^{a-1}}{2^{2a+1}} \frac{\pi}{1-p^2} \\
 &\quad \left\{ (e^q - e^{-q})^{2a+1} \frac{p e^{qs} + e^{(r-s)q}}{e^{qr} - p} - p e^{(2a+1+s-r)q} \sum_0^d (-1)^n \binom{2a+1}{n} e^{-2nq} - p e^{(r-s-2a-1)q} \right. \\
 &\quad \left. \sum_0^d (-1)^n \binom{2a+1}{n} e^{2nq} \right\} [r - 2a - 1 < s > 2a + 1, 2s > r, s-r \text{ fractionn.}], = \frac{(-1)^{a-1}}{2^{2a+1}} \\
 &\quad \frac{\pi}{1-p^2} \left\{ (e^q - e^{-q})^{2a+1} \frac{e^{(r-s)q} + p e^{sq}}{e^{qr} - p} - 1 \right\} \left[s = 2a + 1 < \frac{1}{2} r \right], = \frac{(-1)^{a-1}}{2^{2a+1}} \frac{\pi}{1-p^2} \\
 &\quad \left\{ (e^q - e^{-q})^{2a+1} \frac{e^{(r-s)q} + p e^{sq}}{e^{qr} - p} - 1 - p e^{(2a+1+s-r)q} \sum_0^{d-1} (-1)^n \binom{2a+1}{n} e^{-2nq} - p e^{(r-s-2a-1)q} \right. \\
 &\quad \left. \sum_0^d (-1)^n \binom{2a+1}{n} e^{2nq} \right\} \left[s = 2a + 1 > \frac{1}{2} r, s-r \text{ entier} \right], = \frac{(-1)^{a-1}}{2^{2a+1}} \frac{\pi}{1-p^2} \left\{ (e^q - e^{-q})^{2a+1} \right. \\
 &\quad \left. \frac{e^{(r-s)q} + p e^{sq}}{e^{qr} - p} - 1 - p e^{(2a+1+s-r)q} \sum_0^d (-1)^n \binom{2a+1}{n} e^{-2nq} - p e^{(r-s-2a-1)q} \sum_0^d (-1)^n \right. \\
 &\quad \left. \binom{2a+1}{n} e^{2nq} \right\} \left[s = 2a + 1 > \frac{1}{2} r, s-r \text{ fract.} \right]; \left[\text{partout } d = \mathcal{L} \frac{1}{2} (2a + 1 - r + s) \right]
 \end{aligned}$$

(V, 77, 78, 88, 87).

$$\begin{aligned}
 18) \int \frac{\cos^{2a} x \cdot \cos r x}{1 - 2p \cos r x + p^2} \frac{dx}{q^2 + x^2} &= \frac{\pi}{2^{2a+1} q (1-p^2)} \left[(e^q + e^{-q})^{2a} \frac{1+p^2}{e^{qr} - p} + p \left\{ \binom{2a}{a} + \right. \right. \\
 &\quad \left. \left. + 2 \sum_1^a \binom{2a}{n+a} e^{-2nq} \right\} \right] [r \geq 2a] \text{ (V, 72*)}.
 \end{aligned}$$

$$19) \int \frac{\cos^{2a+1} x \cdot \cos rx}{1 - 2p \cos rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{2a+1} q (1-p^2)} \left\{ 2p \sum_{n=0}^a \binom{2a+1}{n+a+1} e^{-(2n+1)r} + \right. \\ \left. + (e^r + e^{-r})^{2a+1} \frac{1+p^2}{e^{2r}-p} \right\} [r \geq 2a+1] \text{ (V, 73).}$$

$$20) \int \frac{\cos^a x \cdot \cos rx}{1 - 2p \cos 2rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{a+1} q (1-p)} (e^r + e^{-r})^a \frac{e^{ar}}{e^{2r}-p} [r \geq a] \text{ (V, 88).}$$

$$21) \int \frac{\cos^a x \cdot \cos sx}{1 - 2p \cos rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{a+1} q (1-p^2)} (e^r + e^{-r})^a \frac{e^{(r-s)r} + p e^{sr}}{e^{2r}-p} [2s \geq 2a \leq r], = \\ = \frac{\pi}{2^{a+1} q (1-p^2)} \left\{ (e^r + e^{-r})^a \frac{e^{(r-s)r} + p e^{sr}}{e^{2r}-p} - e^{(a-s)r} \sum_{n=0}^a \binom{a}{n} e^{-2nr} + e^{(s-a)r} \sum_{n=0}^a \binom{a}{n} e^{2nr} \right\} \\ [2a > 2s \leq r, d = \mathcal{L} \frac{1}{2} (a-s)], = \frac{\pi}{2^{a+1} q (1-p^2)} (e^r + e^{-r})^a \left\{ e^{(r-s)r} \left(\frac{1}{e^{2r}-p} + p \right) + \right. \\ \left. + e^{(s-r)r} \frac{p^2}{e^{2r}-p} \right\} [r+a \leq s \leq 2r-a \leq 3a], = \frac{\pi}{2^{a+1} q (1-p^2)} \left[(e^r + e^{-r})^a \left\{ e^{(r-s)r} \right. \right. \\ \left. \left. \left(\frac{1}{e^{2r}-p} + p \right) + e^{(s-r)r} \frac{p^2}{e^{2r}-p} \right\} - e^{(a+r-s)r} \sum_{n=0}^a \binom{a}{n} e^{-2nr} + e^{(s-r-a)r} \sum_{n=0}^a \binom{a}{n} e^{2nr} \right] \\ [r+a > s \leq 2r-a, 2s \leq 3r, d = \mathcal{L} \frac{1}{2} (a+r-s)], = \frac{\pi}{2^{a+1} q (1-p^2)} (e^r + e^{-r})^a \\ \frac{p e^{sr} + e^{(r-s)r}}{e^{2r}-p} [r-a \geq s \geq a \leq \frac{1}{2} r], = \frac{\pi}{2^{a+1} q (1-p^2)} \left\{ (e^r + e^{-r})^a \frac{p e^{sr} + e^{(r-s)r}}{e^{2r}-p} - \right. \\ \left. - e^{(a+s-r)r} \sum_{n=0}^a \binom{a}{n} e^{-2nr} - e^{(r-s-a)r} \sum_{n=0}^a \binom{a}{n} e^{2nr} \right\} [r-a < s \leq a, 2s \geq 3r, \\ d = \mathcal{L} \frac{1}{2} (a+s-r)] \text{ (V, 74, 80).}$$

$$22) \int \sin^s rx \frac{\sin(\frac{1}{2}s\pi - srx)}{1 - 2p \cos 2rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+1}} \frac{(1-p)^s - (1-e^{-2sr})^s}{(1-pe^{-2sr})(1-pe^{2sr})} \text{ (H, 148).}$$

$$23) \int \sin^s rx \frac{\cos(\frac{1}{2}s\pi - srx)}{1 - 2p \cos 2rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+1} q} \frac{2}{(1-pe^{-2sr})(1-pe^{2sr})} \left\{ (1-e^{-2sr})^s - \right. \\ \left. - \frac{p}{1+p} (e^{2sr} - e^{-2sr}) (1-p)^{s-1} \right\} \text{ (H, 148).}$$

$$24) \int \sin^{s-1} rx \frac{\sin\{(s-1)\frac{1}{2}\pi - (s+1)rx\}}{1 - 2p \cos 2rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^s} \frac{(1-e^{-2sr})^{s-1} e^{-2sr} - p(1-p)^{s-1}}{(1-pe^{-2sr})(1-pe^{2sr})} \\ \text{ (H, 169).}$$

F. Alg. rat. fract. à dén. bin. $q^2 + x^2$; $[p^2 < 1]$. TABLE 194, suite. Lim. 0 et ∞ .
Circ. Dir. en dén. trin. et deux fact. au num.;

$$25) \int \frac{\sin^{s-1} rx \cdot \cos \left\{ (s-1) \frac{1}{2} \pi - (s+1) rx \right\}}{1 - 2p \cos 2rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^s q} \frac{e^{-2qr}}{(1 - pe^{-2qr})(1 - pe^{2qr})} \\ \left\{ (1 - e^{-2qr})^{s-1} + \frac{p^s}{1+p} (1-p)^{s-1} (1 - e^{2qr}) \right\} \quad (\text{H, 169}).$$

$$26) \int \frac{\cos^s rx \cdot \sin srx}{1 - 2p \cos 2rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+1}} \frac{(1 + e^{-2qr})^s - (1+p)^s}{(1 - pe^{-2qr})(1 - pe^{2qr})} \quad (\text{H, 146}).$$

$$27) \int \frac{\cos^s rx \cdot \cos srx}{1 - 2p \cos 2rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+1} q} \frac{1}{(1 - pe^{-2qr})(1 - pe^{2qr})} \left\{ (1 + e^{-2qr})^s - \frac{p}{1-p} \right. \\ \left. (e^{2qr} - e^{-2qr})(1+p)^{s-1} \right\} \quad (\text{H, 146}).$$

$$28) \int \frac{\cos^{s-1} rx \cdot \sin \left\{ (s+1) rx \right\}}{1 - 2p \cos 2rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^s} \frac{(1 + e^{-2qr})^{s-1} e^{-2qr} - p(1+p)^{s-1}}{(1 - pe^{-2qr})(1 - pe^{2qr})} \quad (\text{H, 165}).$$

$$29) \int \frac{\cos^{s-1} rx \cdot \cos \left\{ (s+1) rx \right\}}{1 - 2p \cos 2rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^s q} \frac{1}{(1 - pe^{-2qr})(1 - pe^{2qr})} \left\{ (1 + e^{-2qr})^{s-1} e^{-2qr} - \right. \\ \left. - \frac{2p^s}{1-p} (e^{2qr} - e^{-2qr})(1+p)^{s-1} \right\} \quad (\text{H, 165}).$$

F. Alg. rat. fract. à dén. bin. $q^2 + x^2$; $[p^2 < 1]$. TABLE 195. Lim. 0 et ∞ .
Circ. Dir. en dén. trin. et plus. fact. au num.;

$$1) \int \frac{\sin^{2a+1} x \cdot \sin rx \cdot \sin sx}{1 - 2p \cos rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1}} (e^q - e^{-q})^{2a+1} \frac{e^{qs} - e^{-qs}}{e^{qr} - p} [s < r - 2a - 1], = \\ = \frac{(-1)^{a-1} \pi}{2^{2a+1}} \left\{ (e^q - e^{-q})^{2a+1} \frac{e^{qs} - e^{-qs}}{e^{(s+2a+1)q} - p} - 1 \right\} [s = r - 2a - 1] \quad (\text{V, 79}).$$

$$2) \int \frac{\sin^{2a+1} x \cdot \sin rx \cdot \sin sx}{1 - 2p \cos 2rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1}} \frac{1}{1+p} (e^q - e^{-q})^{2a+1} (e^{qs} - e^{-qs}) \frac{e^{qr}}{e^{2qr} - p} \\ [s < r - 2a - 1], = \frac{(-1)^{a-1} \pi}{2^{2a+1}} \frac{1}{1+p} \left\{ (e^q - e^{-q})^{2a+1} (e^{qs} - e^{-qs}) \frac{e^{qr}}{e^{2qr} - p} - 1 \right\} \\ [s = r - 2a - 1] \quad (\text{V, 90}).$$

$$3) \int \frac{\sin^{2a} x \cdot \sin rx \cdot \cos sx}{1 - 2p \cos rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} (e^q - e^{-q})^{2a} \frac{e^{qs} + e^{-qs}}{e^{qr} - p} [s < r - 2a], = \frac{(-1)^a \pi}{2^{2a+1}} \\ \left\{ (e^q - e^{-q})^{2a} \frac{e^{qs} + e^{-qs}}{e^{(s+2a)q} - p} - 1 \right\} [s = r - 2a] \quad (\text{V, 76, 77}).$$

$$4) \int \frac{\sin^{2a} x \cdot \sin sx \cdot \cos rx}{1 - 2p \cos rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} \frac{1}{1-p^2} (e^q - e^{-q})^{2a} \left\{ 2p e^{-qs} - (e^{qs} - e^{-qs}) \right. \\ \left. \frac{1+p^2}{e^{qr} - p} \right\} [2s > 4a < r], = \frac{(-1)^a \pi}{2^{2a+1}} \frac{1}{1-p^2} \left[(e^q - e^{-q})^{2a} (e^{-qs} - e^{qs}) \frac{1+p^2}{e^{qr} - p} + 2p \left\{ (e^q - e^{-q})^{2a} \right. \right. \\ \left. \left. - (e^{qs} - e^{-qs}) \frac{1+p^2}{e^{qr} - p} \right\} \right] \quad (\text{V, 78}).$$

$$\begin{aligned} & e^{-qs} - e^{(2b-s)s} \sum_0^{d-1} (-1)^n \binom{2a}{n} e^{-2ns} - e^{(s-2a)s} \sum_0^d (-1)^n \binom{2a}{n} e^{2ns} \Big] [r > 2s < 4a, \text{sent.}], = \\ & = \frac{(-1)^a}{2^{2a+1}} \frac{\pi}{1-p^2} \left[(e^q - e^{-q})^{2a} (e^{-qs} - e^{qs}) \frac{1+p^2}{e^{qr}-p} + 2p \left\{ (e^q - e^{-q})^{2a} e^{-qs} - e^{(2a-s)s} \right. \right. \\ & \left. \left. \sum_0^d (-1)^n \binom{2a}{n} e^{-2ns} - e^{(s-2a)s} \sum_0^d (-1)^n \binom{2a}{n} e^{2ns} \right\} \right] [r > 2s < 4a, s \text{ fractionn.}], = \\ & = \frac{(-1)^a}{2^{2a+1}} \frac{\pi}{1-p^2} \left\{ (e^q - e^{-q})^{2a} \left(2p e^{-qs} - (e^{qs} - e^{-qs}) \frac{1+p^2}{e^{(s+2a)s}-p} \right) + (1+p^2) \right\} [2r-4a= \\ & = 2s > r > 4a], = \frac{(-1)^a}{2^{2a+1}} \frac{\pi}{1-p^2} \left\{ (e^q - e^{-q})^{2a} \left(2p e^{-qs} - (e^{qs} - e^{-qs}) \frac{1+p^2}{e^{(s+2a)s}-p} \right) + \right. \\ & \left. + (1+p^2) - 2p e^{(2a-s)s} \sum_0^{d-1} (-1)^n \binom{2a}{n} e^{-2ns} - 2p e^{(s-2a)s} \sum_0^d (-1)^n \binom{2a}{n} e^{2ns} \right\} [2r-4a= \\ & = 2s < r < 4a, \text{sent.}], = \frac{(-1)^a}{2^{2a+1}} \frac{\pi}{1-p^2} \left\{ (e^q - e^{-q})^{2a} \left(2p e^{-qs} - (e^{qs} - e^{-qs}) \frac{1+p^2}{e^{(s+2a)s}-p} \right) + \right. \\ & \left. + (1+p^2) - 2p e^{(2a-s)s} \sum_0^d (-1)^n \binom{2a}{n} e^{-2ns} - 2p e^{(s-2a)s} \sum_0^d (-1)^n \binom{2a}{n} e^{2ns} \right\} [2r-4a= \\ & = 2s < r < 4a, s \text{ fractionn.}]; \left[d = \mathcal{C} \left(a - \frac{1}{2} p \right) \right] \text{ (V, 76).} \end{aligned}$$

$$\begin{aligned} 5) \int \frac{\sin^{2a} x \cdot \sin rx \cdot \cos sx}{1-2p \cos 2rx + p^2} \frac{x dx}{q^2 + x^2} &= \frac{(-1)^a \pi}{2^{2a+1}} \frac{\pi}{1+p} (e^q - e^{-q})^{2a} (e^{qs} + e^{-qs}) \frac{e^{qr}}{e^{2qr}-p} \\ [s < r-2a], &= \frac{(-1)^a}{2^{2a+1}} \frac{\pi}{1+p} \left\{ (e^q - e^{-q})^{2a} (e^{qs} + e^{-qs}) \frac{e^{qr}}{e^{2qr}-p} - 1 \right\} [s = r-2a] \\ &\text{(V, 89).} \end{aligned}$$

$$\begin{aligned} 6) \int \frac{\sin^{2a} x \cdot \sin sx \cdot \cos rx}{1-2p \cos 2rx + p^2} \frac{x dx}{q^2 + x^2} &= \frac{(-1)^{a-1} \pi}{2^{2a+1}} \frac{\pi}{1-p} (e^q - e^{-q})^{2a} (e^{qs} - e^{-qs}) \frac{e^{qr}}{e^{2qr}-p} \\ [2s > 4a < r, \text{ ou } r > 2s < 4a], &= \frac{(-1)^{a-1} \pi}{2^{2a+1}} \frac{\pi}{1-p} \left\{ (e^q - e^{-q})^{2a} (e^{qs} - e^{-qs}) \frac{e^{qr}}{e^{2qr}-p} - 1 \right\} [s = r-2a, \text{ et } 2s > r > 4a \text{ ou } 2s < r < 4a] \text{ (V, 89).} \end{aligned}$$

$$\begin{aligned} 7) \int \frac{\sin^{2a+1} x \cdot \cos rx \cdot \cos sx}{1-2p \cos 2rx + p^2} \frac{x dx}{q^2 + x^2} &= \frac{(-1)^{a-1} \pi}{2^{2a+1}} \frac{\pi}{1-p^2} (e^q - e^{-q})^{2a+1} \left\{ 2p e^{-qs} + (e^{qs} + e^{-qs}) \frac{1+p^2}{e^{qr}-p} \right. \\ &\left. + 2p \left\{ e^{-qs} (e^q - e^{-q})^{2a+1} - e^{(2a+1-s)s} \sum_0^{d-1} (-1)^n \binom{2a+1}{n} e^{-2ns} - e^{(s-2a-1)s} \sum_0^d (-1)^n \binom{2a+1}{n} e^{2ns} \right\} \right\} [2s > 4a + 2 < r], = \frac{(-1)^{a-1} \pi}{2^{2a+1}} \frac{\pi}{1-p^2} \left\{ (e^q - e^{-q})^{2a+1} (e^{qs} + e^{-qs}) \frac{1+p^2}{e^{qr}-p} + \right. \\ &\left. + 2p \left\{ e^{-qs} (e^q - e^{-q})^{2a+1} - e^{(2a+1-s)s} \sum_0^{d-1} (-1)^n \binom{2a+1}{n} e^{-2ns} - e^{(s-2a-1)s} \sum_0^d (-1)^n \binom{2a+1}{n} e^{2ns} \right\} \right\} [2s < r < 4a + 2, s \text{ fractionn.}], = \end{aligned}$$

$$\left\{ \binom{2a+1}{n} e^{2nx} \right\} \left\{ [r > 2s < 4a+2, s \text{ entier}], = \frac{(-1)^{a-1}}{2^{2a+3}} \frac{\pi}{1-p^2} \left\{ (e^q - e^{-q})^{2a+1} (e^{qs} + e^{-qs}) \right. \right. \\ \left. \frac{1+p^2}{e^{qr}-p} + 2p \left\{ e^{-qs} (e^q - e^{-q})^{2a+1} - e^{(2a+1-s)q} \sum_0^d (-1)^n \binom{2a+1}{n} e^{-2nx} - e^{(s-2a-1)q} \right. \right. \\ \left. \left. \sum_0^d (-1)^n \binom{2a+1}{n} e^{2nx} \right\} \right\} [r > 2s < 4a+2, s \text{ fractionn.}], = \frac{(-1)^{a-1}}{2^{2a+3}} \frac{\pi}{1-p^2} \left\{ (e^q - e^{-q})^{2a+1} \right. \\ \left. \left(2pe^{-qs} + (e^{qs} + e^{-qs}) \frac{1+p^2}{e^{(s+2a+1)q}-p} \right) - (1+p^2) \right\} [4a+2 < r < 2s=2r-4a-2], = \\ = \frac{(-1)^{a-1}}{2^{2a+3}} \frac{\pi}{1-p^2} \left\{ (e^q - e^{-q})^{2a+1} \left(2pe^{-qs} + (e^{qs} + e^{-qs}) \frac{1+p^2}{e^{(s+2a+1)q}-p} \right) - (1+p^2) + \right. \\ \left. + 2p \left\{ e^{(2a+1-s)q} (1 - e^{-2q})^{2a+1} - e^{(2a+1-s)q} \sum_0^{d-1} (-1)^n \binom{2a+1}{n} e^{-2nx} - e^{(s-2a-1)q} \right. \right. \\ \left. \left. \sum_0^d (-1)^n \binom{2a+1}{n} e^{2nx} \right\} \right\} [4a+2 > r > 2s=2r-4a-2, s \text{ entier}], = \frac{(-1)^{a-1}}{2^{2a+3}} \frac{\pi}{1-p^2} \\ \left\{ (e^q - e^{-q})^{2a+1} \left(2pe^{-qs} + (e^{qs} + e^{-qs}) \frac{1+p^2}{e^{(s+2a+1)q}-p} \right) - (1+p^2) + 2p \left\{ e^{(2a+1-s)q} \right. \right. \\ \left. \left. (1 - e^{-2q})^{2a+1} - e^{(2a+1-s)q} \sum_0^d (-1)^n \binom{2a+1}{n} e^{-2nx} - e^{(s-2a-1)q} \sum_0^d (-1)^n \binom{2a+1}{n} e^{2nx} \right\} \right\} \\ [4a+2 > r > 2s=2r-4a-2, s \text{ fractionn.}]; \left[d = \int \frac{1}{2} (2a+1-s) \right] \text{ (V, 78, 79).}$$

$$8) \int \frac{\sin^{2a+1} x \cdot \cos rx \cdot \cos sx}{1-2p \cos 2rx + p^2} \frac{xdx}{q^2+x^2} = \frac{(-1)^{a-1}}{2^{2a+3}} \frac{\pi}{1-p} (e^q - e^{-q})^{2a+1} (e^{qs} + e^{-qs}) \frac{e^{qr}}{e^{qr}-p} \\ [2s > 4a+2 < r \text{ ou } r > 2s < 4a+2], = \frac{(-1)^{a-1}}{2^{2a+3}} \frac{\pi}{1-p} \left\{ (e^q - e^{-q})^{2a+1} (e^{qs} + e^{-qs}) \right. \\ \left. \frac{e^{qr}}{e^{qr}-p} - 1 \right\} [s=r-2a-1, \text{ et } 2s > r > 4a+2 \text{ ou } 2s < r < 4a+2] \text{ (V, 90).}$$

$$9) \int \frac{\cos^a x \cdot \sin rx \cdot \sin sx}{1-2p \cos rx + p^2} \frac{dx}{q^2+x^2} = \frac{\pi}{2^{a+1}q} (e^q + e^{-q})^a \frac{e^{qs} - e^{-qs}}{e^{qr}-p} [s \leq r-a] \text{ (V, 74).}$$

$$10) \int \frac{\cos^a x \cdot \sin rx \cdot \sin sx}{1-2p \cos 2rx + p^2} \frac{dx}{q^2+x^2} = \frac{\pi}{2^{a+1}q(1+p)} (e^q + e^{-q})^a (e^{qs} - e^{-qs}) \frac{e^{qr}}{e^{qr}-p} [s \leq r-a] \\ \text{(V, 89).}$$

$$11) \int \frac{\cos^a x \cdot \cos rx \cdot \cos sx}{1-2p \cos rx + p^2} \frac{dx}{q^2+x^2} = \frac{\pi}{2^{a+1}q(1-p^2)} (e^q + e^{-q})^a \left\{ 2pe^{-qs} + (e^{qs} + e^{-qs}) \frac{1+p^2}{e^{qr}-p} \right\} \\ [2s \geq 2a \leq r], = \frac{\pi}{2^{a+1}q(1-p^2)} \left\{ (e^q + e^{-q})^a (e^{qs} + e^{-qs}) \frac{1+p^2}{e^{qr}-p} + 2p \left\{ (e^q + e^{-q})^a e^{-qs} - \right. \right. \\ \left. \left. - e^{(a-s)q} \sum_0^a \binom{a}{n} e^{-2nx} + e^{(s-a)q} \sum_0^a \binom{a}{n} e^{2nx} \right\} \right\} [2a > 2s \leq r, d = \int \frac{1}{2} (a-s)] \text{ (V, 74).}$$

F. Alg. rat. fract. à dén. bin. $q^2 + x^2$; $[p^2 < 1]$. TABLE 195, suite.
Circ. Dir. en dén. trin. et plus. fact. au num.;

Lim. 0 et ∞ .

$$12) \int \frac{\cos^s x \cdot \cos rx \cdot \cos sx}{1 - 2p \cos 2rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+1} q (1-p)} (e^r + e^{-r})^s (e^{sr} + e^{-sr}) \frac{e^{sr}}{e^{2sr} - p}$$

$[2s \geq 2a \leq r \text{ ou } 2a > 2s \leq r]$ (V, 89).

$$13) \int \sin^s rx \cdot \cos^t rx \frac{\sin \{ \frac{1}{2} s \pi - (s+t) rx \}}{1 - 2p \cos 2rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+t+1}} \frac{(1+p)^{t-1} (1-p)^{s-1} -}{(1 -$$

$$\frac{-(1 + e^{-2sr})^t (1 - e^{-2sr})^s}{-p e^{-sr}) (1 - p e^{sr})} \text{ (H, 150).}$$

$$14) \int \sin^s rx \cdot \cos^t rx \frac{\cos \{ \frac{1}{2} s \pi - (s+t) rx \}}{1 - 2p \cos 2rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+t+1} q} \frac{(1 + e^{-2sr})^t (1 - e^{-2sr})^s -}{(1 -$$

$$\frac{-(e^{2sr} - e^{-2sr}) p (1+p)^{t-1} (1-p)^{s-1}}{-p e^{-sr}) (1 - p e^{sr})} \text{ (H, 150).}$$

$$15) \int \sin^{s-1} rx \cdot \cos^{t-1} rx \frac{\sin \{ (s-1) \frac{1}{2} \pi - (s+t) rx \}}{1 - 2p \cos 2rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+t-1}}$$

$$\frac{(1 + e^{-2sr})^{t-1} (1 - e^{-2sr})^{s-1} e^{-2sr} - p (1+p)^{t-1} (1-p)^{s-1}}{(1 - p e^{-sr}) (1 - p e^{sr})} \text{ (H, 168).}$$

$$16) \int \sin^{s-1} rx \cdot \cos^{t-1} rx \frac{\cos \{ (s-1) \frac{1}{2} \pi - (s+t) rx \}}{1 - 2p \cos 2rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi e^{-2sr}}{2^{s+t-1} q}$$

$$\frac{(1 + e^{-2sr})^{t-1} (1 - e^{-2sr})^{s-1} + p^2 (1+p)^{t-2} (1-p)^{s-2} (1 - e^{2sr})}{(1 - p e^{-sr}) (1 - p e^{sr})} \text{ (H, 168).}$$

F. Alg. rat. fract. à dén. bin. $q^2 + x^2$; $[p^2 < 1]$. TABLE 196.
Circ. Dir. en dén. trin. et fonct. polyn. au num.;

Lim. 0 et ∞ .

$$1) \int \frac{\cos rx - p}{1 - 2p \cos rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} \frac{1}{e^{qr} - p} [p^2 < 1], = \frac{\pi}{2q} \frac{1}{e^{-qr} - p} [p^2 > 1] \text{ (VIII, 584).}$$

$$2) \int \frac{\cos rx - p}{1 - 2p \cos rx + p^2} \frac{dx}{4q^4 + x^4} = \frac{\pi}{8q^3} e^{-qr} \frac{\cos qr + \sin qr - p e^{-qr}}{1 - 2p e^{-qr} \cos qr + p^2 e^{-2qr}} \text{ (H, 93).}$$

$$3) \int \frac{\cos rx - p}{1 - 2p \cos rx + p^2} \frac{x^3 dx}{4q^4 + x^4} = \frac{\pi}{4q} e^{-qr} \frac{\cos qr - \sin qr - p e^{-qr}}{1 - 2p e^{-qr} \cos qr + p^2 e^{-2qr}} \text{ (H, 94).}$$

$$4) \int \frac{\cos rx - p}{1 - 2p \cos rx + p^2} \frac{dx}{1 + x^{2a}} = \frac{\pi}{2a} \frac{e^{-r}}{1 - p e^{-r}} - \frac{\pi^{\frac{1}{2}(a-1)}}{a} \sum_1 e^{-r \cos \frac{n\pi}{a}} \frac{\sin \frac{n\pi}{a}}{1 - 2p e^{-r \cos \frac{n\pi}{a}} \cos(r \sin \frac{n\pi}{a}) +$$

$$\frac{\sin(r \sin \frac{n\pi}{a})}{+ p^2 e^{-2r \cos \frac{n\pi}{a}}} - \frac{\pi^{\frac{1}{2}(a-1)}}{a} \sum_1 \cos \frac{n\pi}{a} \frac{e^{-r \cos \frac{n\pi}{a}} \cos(r \sin \frac{n\pi}{a}) - p e^{-2r \cos \frac{n\pi}{a}}}{1 - 2p e^{-r \cos \frac{n\pi}{a}} \cos(r \sin \frac{n\pi}{a}) + p^2 e^{-2r \cos \frac{n\pi}{a}}} \left[\begin{matrix} a \\ \text{impair} \end{matrix} \right], =$$

$$= \frac{\pi}{a} \sum_1^{\frac{1}{2}a-1} e^{-r \cos \left(\frac{2n+1}{2a} \pi \right)} \frac{\sin \left\{ r \sin \left(\frac{2n+1}{2a} \pi \right) \right\} \cdot \sin \left(\frac{2n+1}{2a} \pi \right)}{1 - 2p e^{-r \cos \left(\frac{2n+1}{2a} \pi \right)} \cos \left\{ r \sin \left(\frac{2n+1}{2a} \pi \right) \right\} + p^2 e^{-2r \cos \left(\frac{2n+1}{2a} \pi \right)}} +$$

$$+ \frac{\pi}{a} \sum_1^{\frac{1}{2}a-1} \cos \left(\frac{2n+1}{2a} \pi \right) \frac{e^{-r \cos \left(\frac{2n+1}{2a} \pi \right)} \cos \left\{ r \sin \left(\frac{2n+1}{2a} \pi \right) \right\} - p e^{-2r \cos \left(\frac{2n+1}{2a} \pi \right)}}{1 - 2p e^{-r \cos \left(\frac{2n+1}{2a} \pi \right)} \cos \left\{ r \sin \left(\frac{2n+1}{2a} \pi \right) \right\} + p^2 e^{-2r \cos \left(\frac{2n+1}{2a} \pi \right)}}$$

[$\frac{a}{\text{pair}}$] (IV, 302).

$$5) \int \frac{1 - p \cos rx - p^a \cos arx + p^{a+1} \cos \{(a-1)rx\}}{1 - 2p \cos rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} \frac{1 - p^a e^{-aqr}}{1 - p e^{-qr}} \quad (\text{VIII, 492}).$$

$$6) \int \frac{\sin rx - p^{a-1} \sin arx + p^a \sin \{(a-1)rx\}}{1 - 2p \cos rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} \frac{e^{-qr} - p^{a-1} e^{-aqr}}{1 - p e^{-qr}} \quad (\text{VIII, 493}).$$

$$7) \int \frac{\sin rx - p^{a-1} \sin arx + p^a \sin \{(a-1)rx\}}{1 - 2p \cos rx + p^2} \frac{\sin sx dx}{q^2 + x^2} = \frac{\pi}{4pq} e^{-qs} \left\{ \frac{1 - p^a e^{aqr}}{1 - p e^{qr}} - \frac{1 - p^a e^{-aqr}}{1 - p e^{-qr}} \right\}$$

$$[s \geq (a-1)r], = \frac{\pi}{4pq} \left\{ (e^{qs} - e^{-qs}) \frac{1 - p^a e^{-aqr}}{1 - p e^{-qr}} - e^{qs} \frac{1 - p^{d+1} e^{-(d+1)qr}}{1 - p e^{-qr}} + \right.$$

$$\left. + e^{-qs} \frac{1 - p^{d+1} e^{(d+1)qr}}{1 - p e^{qr}} \right\} [s < (a-1)r, d = \mathcal{E} \frac{s}{r}] \quad (\text{VIII, 493}).$$

$$8) \int \frac{1 - p \cos rx - p^a \cos arx + p^{a+1} \cos \{(a-1)rx\}}{1 - 2p \cos rx + p^2} \frac{x \sin sx dx}{q^2 + x^2} = \frac{\pi}{4} e^{-qs} \left\{ \frac{1 - p^a e^{aqr}}{1 - p e^{qr}} + \right.$$

$$\left. + \frac{1 - p^a e^{-aqr}}{1 - p e^{-qr}} \right\} [s > (a-1)r], = \frac{\pi}{4} e^{-qs} \left\{ \frac{1 - p^{a-1} e^{(a-1)qr}}{1 - p e^{qr}} + \frac{1 - p^a e^{-aqr}}{1 - p e^{-qr}} \right\}$$

$$[s = (a-1)r], = \frac{\pi}{4} (e^{-qs} - e^{qs}) \frac{1 - p^a e^{-aqr}}{1 - p e^{-qr}} + \frac{\pi}{4} e^{qs} \frac{1 - p^{d+1} e^{-(d+1)qr}}{1 - p e^{-qr}} +$$

$$+ \frac{\pi}{4} e^{-qs} \frac{1 - p^{d+1} e^{(d+1)qr}}{1 - p e^{qr}} [s < (a-1)r, \text{fract.}], = \frac{\pi}{4} (e^{-qs} - e^{qs}) \frac{1 - p^a e^{-aqr}}{1 - p e^{-qr}} +$$

$$+ \frac{\pi}{4} e^{qs} \frac{1 - p^d e^{-dqr}}{1 - p e^{-qr}} + \frac{\pi}{4} e^{-qs} \frac{1 - p^{d+1} e^{(d+1)qr}}{1 - p e^{qr}} [s < (a-1)r, \text{ent.}]; [d = \mathcal{E} \frac{s}{r}]$$

(VIII, 493).

$$9) \int \frac{1 - p \cos rx - p^a \cos arx + p^{a+1} \cos \{(a-1)rx\}}{1 - 2p \cos rx + p^2} \frac{\cos sx dx}{q^2 + x^2} = \frac{\pi}{4q} e^{-qs} \left\{ \frac{1 - p^a e^{aqr}}{1 - p e^{qr}} + \right.$$

$$\left. + \frac{1 - p^a e^{-aqr}}{1 - p e^{-qr}} \right\} [s \geq (a-1)r], = \frac{\pi}{4q} \left\{ (e^{qs} + e^{-qs}) \frac{1 - p^a e^{-aqr}}{1 - p e^{-qr}} - \right.$$

$$\left. - e^{qs} \frac{1 - p^{d+1} e^{-(d+1)qr}}{1 - p e^{-qr}} + e^{-qs} \frac{1 - p^{d+1} e^{(d+1)qr}}{1 - p e^{qr}} \right\} [s < (a-1)r, d = \mathcal{E} \frac{s}{r}]$$

(VIII, 492).

$$10) \int \frac{\sin rx - p^{a-1} \sin arx + p^a \sin \{(a-1)rx\}}{1 - 2p \cos rx + p^2} \frac{x \cos rx dx}{q^2 + x^2} = \frac{\pi}{4p} e^{-qr} \left\{ \frac{1 - p^a e^{-aqr}}{1 - p e^{-qr}} - \frac{1 - p^a e^{aqr}}{1 - p e^{qr}} \right\}$$

$$[s > (a-1)r], = \frac{\pi}{4p} e^{-qr} \left\{ \frac{1 - p^{a-1} e^{(1-s)qr}}{1 - p e^{-qr}} - \frac{1 - p^{a-1} e^{(s-1)qr}}{1 - p e^{qr}} + p^{a-1} e^{-2qr} \right\} [s = (a-1)r], =$$

$$= \frac{\pi}{4p} \left\{ (e^{qr} + e^{-qr}) \frac{1 - p^a e^{-aqr}}{1 - p e^{-qr}} - e^{qr} \frac{1 - p^{a+1} e^{-(a+1)qr}}{1 - p e^{-qr}} - e^{-qr} \frac{1 - p^{a+1} e^{(a+1)qr}}{1 - p e^{qr}} \right\}$$

$$[s > (a-1)r, \text{fractionnaire}], = \frac{\pi}{4p} \left\{ (e^{qr} + e^{-qr}) \frac{1 - p^a e^{-aqr}}{1 - p e^{-qr}} - e^{qr} \frac{1 - p^a e^{-aqr}}{1 - p e^{-qr}} - e^{-qr} \frac{1 - p^{a+1} e^{(a+1)qr}}{1 - p e^{qr}} \right\} [s < (a-1)r, \text{entier}]; \left[d = \mathcal{E} \frac{s}{r} \right] \text{ (VIII, 493).}$$

$$11) \int \frac{\sin \{(a+1)2rx\} - p \sin \{(2a+1)rx\}}{1 - 2p \cos rx + p^2} \frac{x \sin^2 rx dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} e^{-qr} \frac{(1 - e^{-2qr})^{2a}}{e^{qr} - p} \text{ (V, 60*)}.$$

$$12) \int \frac{\cos \{(2a+3)rx\} - p \cos \{(a+1)2rx\}}{1 - 2p \cos rx + p^2} \frac{x \sin^{2a+1} rx dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1}} e^{-qr} \frac{(1 - e^{-2qr})^{2a+1}}{e^{qr} - p} \text{ (V, 60*)}.$$

$$13) \int \frac{\cos \{(a+2)rx\} - p \cos \{(a+1)rx\}}{1 - 2p \cos rx + p^2} \frac{\cos^a rx dx}{q^2 + x^2} = \frac{\pi}{2^{a+1} q} e^{-qr} \frac{(1 + e^{-2qr})^a}{e^{qr} - p} \text{ (V, 58*)}.$$

$$14) \int \frac{\sin 2arx - p \sin \{(2a-1)rx\}}{1 - 2p \cos rx + p^2} \frac{x \sin^{2a} x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} e^{(1-2a)qr} \frac{(e^q - e^{-q})^{2a}}{e^{qr} - p} [r > 1], =$$

$$= \frac{(-1)^a \pi}{2^{2a+1}} \left\{ \frac{(1 - e^{-2q})^{2a}}{1 - p e^{-q}} - 1 \right\} [r = 1] \text{ (V, 59).}$$

$$15) \int \frac{\cos \{(2a+1)rx\} - p \cos 2arx}{1 - 2p \cos rx + p^2} \frac{x \sin^{2a+1} x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1}} e^{-2aqr} \frac{(e^q - e^{-q})^{2a+1}}{e^{qr} - p} [r > 1], =$$

$$= \frac{(-1)^{a-1} \pi}{2^{2a+1}} \left\{ \frac{(1 - e^{-2q})^{2a+1}}{1 - p e^{-q}} - 1 \right\} [r = 1] \text{ (V, 59).}$$

$$16) \int \frac{\cos arx - p \cos \{(a-1)rx\}}{1 - 2p \cos rx + p^2} \frac{\cos^a x dx}{q^2 + x^2} = \frac{\pi}{2^{a+1} q} e^{(1-a)qr} \frac{(e^q + e^{-q})^a}{e^{qr} - p} [r > 1], =$$

$$= \frac{\pi}{2^{a+1} q} \frac{(1 + e^{-2q})^a}{1 - p e^{-q}} [r = 1] \text{ (V, 58).}$$

$$17) \int \frac{\sin rx - p^{t-1} \sin trx + p^t \sin \{(s-1)rx\}}{(1 - 2p \cos rx + p^2)(1 - 2t \cos rx + t^2)} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2p(1 - t e^{-qr})(1 - t e^{qr})}$$

$$\left\{ \frac{1 - p^t e^{-tqr}}{1 - p e^{-qr}} - \frac{1 - p^t t^s}{1 - p t} \right\} \text{ (H, 179).}$$

$$18) \int \frac{1 - p \cos rx - p^s \cos srx + p^{s+1} \cos \{(s-1)rx\}}{(1 - 2p \cos rx + p^2)(1 - 2t \cos rx + t^2)} \frac{dx}{q^2 + x^2} = \frac{\pi}{2q(1 - t e^{-qr})(1 - t e^{qr})}$$

$$\left\{ \frac{1 - p^s e^{-sqr}}{1 - p e^{-qr}} - \frac{1 - p^s t^s}{1 - p t} \frac{p}{1 - p^2} (e^{qr} - e^{-qr}) \right\} \text{ (H, 179).}$$

$$1) \int \frac{\sin rx \cdot \sin sx}{1 - 2p \cos rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q(1-p^2)} \frac{(1-p^2) \cos tqr \cdot \sin sgr + p^{t+1} (p^s - p^{-s}) \sin qr}{1 - 2p \cos qr + p^2} [t > s] \text{ (H, 134).}$$

$$2) \int \frac{\sin rx \cdot \sin sx}{1 - 2p \cos rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \frac{-\sin qr \cdot \cos qs + p^d \sin \{(dr+r-s)q\} + p^{d+1} \sin \{(s-dr)q\}}{1 - 2p \cos qr + p^2} \left[d = \mathcal{L} \frac{s}{r} \right] \text{ (VIII, 505).}$$

$$3) \int \frac{\sin rx \cdot \sin sx}{1 - 2p \cos 2rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q(1+p)} \frac{-(1+p) \sin qr \cdot \cos qs + p^d \sin \{(2dr+r-s)q\} + p^{d+1} \sin \{(s-2dr+r)q\}}{1 - 2p \cos 2qr + p^2} \left[d = \mathcal{L} \frac{s}{2r} \right] \text{ (VIII, 538).}$$

$$4) \int \frac{\sin rx \cdot \cos sx}{1 - 2p \cos rx + p^2} \frac{x dx}{q^2 - x^2} = \frac{\pi}{4} \frac{p^t (p^s + p^{-s}) - 2 \cos tqr \cdot \cos sgr}{1 - 2p \cos qr + p^2} [t > s], = \\ = \frac{\pi}{4} \frac{2 \sin tqr \cdot \sin sgr + p^t (p^t - p^{-t})}{1 - 2p \cos qr + p^2} [t < s] \text{ (H, 135).}$$

$$5) \int \frac{\sin rx \cdot \cos sx}{1 - 2p \cos rx + p^2} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \frac{\sin qs \cdot \sin qr + p^d \cos \{(dr+r-s)q\} - p^{d+1} \cos \{(dr-s)q\}}{1 - 2p \cos qr + p^2} \left[\frac{s}{r} \text{ fract.} \right], = \frac{\pi}{4} \frac{2 \sin qs \cdot \sin qr - p^{d-1} (1-p^2)}{1 - 2p \cos qr + p^2} \left[\frac{s}{r} \text{ entier} \right]; \left[d = \mathcal{L} \frac{s}{r} \right] \text{ (VIII, 505).}$$

$$6) \int \frac{\sin sx \cdot \cos rx}{1 - 2p \cos rx + p^2} \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2(1-p^2)} \frac{(1-p^2) \cos qs \cdot \cos qr - (1+p^2) p^d}{1 - 2p \cos qr + p^2} \frac{\cos \{(dr+r-s)q\} + (1+p^2) p^{d+1} \cos \{(s-dr)q\}}{1 - 2p \cos qr + p^2} \left[\frac{s}{r} \text{ fract.} \right], = \frac{\pi}{4} p^{d-1} + \\ + \frac{\pi}{4p} \frac{p^{d-1} - \cos qs \cdot \cos qr}{1 - 2p \cos qr + p^2} \left[\frac{s}{r} \text{ entier} \right]; \left[d = \mathcal{L} \frac{s}{r} \right] \text{ (VIII, 504).}$$

$$7) \int \frac{\sin rx \cdot \cos sx}{1 - 2p \cos 2rx + p^2} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2(1+p)} \frac{(1+p) \sin qr \cdot \sin qs + p^d \cos \{(2ds+r-s)q\} - p^{d+1} \cos \{(2dr-r-s)q\}}{1 - 2p \cos 2qr + p^2} \left[\frac{s}{2r} \text{ fract.} \right], = \frac{\pi}{8(1+p)} \frac{4(1+p) \sin qr \cdot \sin qs - \{1 + (-1)^d\}}{1 - 2p \cos 2qr + p^2} p^{d+1} (1-p) \cos qr - \{1 + (-1)^{d+1}\} (1-p^2) p^{d(d-1)} \left[\frac{s}{2r} \text{ entier} \right]; \left[d = \mathcal{L} \frac{s}{2r} \right] \text{ (VIII, 538).}$$

$$8) \int \frac{\sin sx \cdot \cos rx}{1 - 2p \cos 2rx + p^2} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2(1-p)} \frac{(1-p) \cos qr \cdot \cos qs + p^d \cos \{(2dr+r-s)q\} - p^{d+1} \cos \{(2dr-r-s)q\}}{1 - 2p \cos 2qr + p^2}$$

$$\frac{-p^{d+1} \cos \{(s-2dr+r)q\}}{-2p \cos 2qr + p^2} \left[\frac{s}{2r} \text{ fract.} \right], = \frac{\pi}{8(1-p)} \frac{4(1-p) \cos qr \cos qs - \{1 + (-1)^d\}}{1-}$$

$$\frac{p^{d+1}(1-p) \cos qr - \{1 + (-1)^{d+1}\}(1-p \cos 2qr) p^{\frac{1}{2}(d-1)}}{-2p \cos 2qr + p^2} \left[\frac{s}{2r} \text{ entier} \right]; \left[d = \mathcal{C} \frac{s}{2r} \right] \text{ (VIII, 538).}$$

$$9) \int \frac{\cos rx \cdot \cos sx}{1-2p \cos 2rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q(1-p^2)} \frac{(1-p^2) \sin tqr \cdot \cos sgr + p^{t+1} (p^s + p^{-s}) \sin qr}{1-2p \cos 2qr + p^2}$$

[$t > s$] (H, 134).

$$10) \int \frac{\cos rx \cdot \cos sx}{1-2p \cos 2rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q(1-p^2)} \frac{(1-p^2) \cos qr \cdot \sin qs + (1+p^2) p^d \sin \{(dr+r-s)q\} +}{1-}$$

$$\frac{+(1+p^2) p^{d+1} \sin \{(s-dr)q\}}{-2p \cos 2qr + p^2} \left[d = \mathcal{C} \frac{s}{r} \right] \text{ (VIII, 504).}$$

$$11) \int \frac{\cos rx \cdot \cos sx}{1-2p \cos 2rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q(1-p)} \frac{(1-p) \cos qr \cdot \sin qs + p^d \sin \{(2dr+r-s)q\} +}{1-}$$

$$\frac{+p^{d+1} \sin \{(s-2dr+r)q\}}{-2p \cos 2qr + p^2} \left[d = \mathcal{C} \frac{s}{2r} \right] \text{ (VIII, 538).}$$

$$12) \int \frac{\sin^s rx \cdot \sin (\frac{1}{2}s\pi - srx)}{1-2p \cos 2rx + p^2} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2^{s+1}} \frac{2^s \sin^s qr \cdot \cos (\frac{1}{2}s\pi - sgr) - (1-p)^s}{1-2p \cos 2qr + p^2} \text{ (H, 148).}$$

$$13) \int \frac{\sin^s rx \cdot \cos (\frac{1}{2}s\pi - srx)}{1-2p \cos 2rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2^{s+1}q} \frac{1}{1-2p \cos 2qr + p^2} \left\{ \frac{2p}{1+p} \sin 2qr \cdot (1-p)^{s-1} - \right.$$

$$\left. - 2^s \sin^s qr \cdot \sin \left(\frac{1}{2}s\pi - sgr \right) \right\} \text{ (H, 148).}$$

$$14) \int \frac{\sin^{s-1} rx \cdot \sin \{(s-1)\frac{1}{2}\pi - (s+1)rx\}}{1-2p \cos 2rx + p^2} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \frac{2^{1-s} p (1-p)^{s-1} - \sin^{s-1} qr}{1-}$$

$$\frac{\cos \{(s-1)\frac{1}{2}\pi - (s+1)qr\}}{-2p \cos 2qr + p^2} \text{ (H, 171).}$$

$$15) \int \frac{\sin^{s-1} rx \cdot \cos \{(s-1)\frac{1}{2}\pi - (s+1)rx\}}{1-2p \cos 2rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \frac{1}{1-2p \cos 2qr + p^2} \left\{ 2^{1-s} \frac{p}{1+p} \right.$$

$$\left. (1-p)^{s-1} \sin 2qr + \sin^{s-1} qr \cdot \sin \{(s-1)\frac{1}{2}\pi - (s+1)qr\} \right\} \text{ (H, 171).}$$

$$16) \int \frac{\cos^s rx \cdot \sin srx}{1-2p \cos 2rx + p^2} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2^{s+1}} \frac{(1+p)^s - 2^s \cos^s qr \cdot \cos sgr}{1-2p \cos 2qr + p^2} \text{ (H, 146).}$$

$$17) \int \frac{\cos^s rx \cdot \cos srx}{1-2p \cos 2rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2^{s+1}q} \frac{1}{1-2p \cos 2qr + p^2} \left\{ \frac{2p}{1-p} \sin 2qr \cdot (1+p)^{s-1} + \right.$$

$$\left. + 2^s \cos^s qr \cdot \sin sgr \right\} \text{ (H, 146).}$$

F. Alg. rat. fract. à dén. bin. $q^2 - x^2$; $[p^2 < 1]$.

Circ. Dir. en dén. trin. et fonct. mon. au num.;

TABLE 197, suite.

Lim. 0 et ∞ .

$$18) \int \frac{\cos^{s-1} rx \cdot \sin \{(s+1)rx\}}{1-2p \cos 2rx + p^2} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \frac{(1+p)^{s-1} p - 2^s \cos^{s-1} qr \cdot \cos \{(s+1)qr\}}{1-2p \cos 2qr + p^2}$$

(H, 166).

$$19) \int \frac{\cos^{s-1} rx \cdot \cos \{(s+1)rx\}}{1-2p \cos 2rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2^{s-1} q} \frac{1}{1-2p \cos 2qr + p^2} \left\{ \frac{p^2}{1-p} (1+p)^{s-2} \sin 2qr + \right. \\ \left. + 2^{s-2} \cos^{s-1} qr \cdot \sin \{(s+1)qr\} \right\} \quad (\text{H, 166}).$$

$$20) \int \frac{\sin^s rx \cdot \cos^t rx \cdot \sin \left\{ \frac{1}{2} s \pi - (s+t)rx \right\}}{1-2p \cos 2rx + p^2} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \frac{\sin^s qr \cdot \cos^t qr \cdot \cos \left\{ \frac{1}{2} s \pi - (s+t)qr \right\} -}{1-2p \cos 2qr + p^2} \frac{-2^{s-t} (1+p)^t (1-p)^s}{-2p \cos 2qr + p^2} \quad (\text{H, 150}).$$

$$21) \int \frac{\sin^s rx \cdot \cos^t rx \cdot \cos \left\{ \frac{1}{2} s \pi - (s+t)rx \right\}}{1-2p \cos 2rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \frac{2^{s-t} p (1+p)^{t-1} (1-p)^{s-1} \sin 2qr -}{1-2p \cos 2qr + p^2} \frac{-\sin^s qr \cdot \cos^t qr \cdot \sin \left\{ \frac{1}{2} s \pi - (s+t)qr \right\}}{-2p \cos 2qr + p^2} \quad (\text{H, 150}).$$

$$22) \int \frac{\sin^{s-1} rx \cdot \cos^{t-1} rx \cdot \sin \left\{ (s-1) \frac{1}{2} \pi - (s+t)rx \right\}}{1-2p \cos 2rx + p^2} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \frac{2^{s-t} p (1+p)^{t-1} (1-p)^{s-1} -}{1-2p \cos 2qr + p^2} \frac{-\sin^{s-1} qr \cdot \cos^{t-1} qr \cdot \cos \left\{ (s-1) \frac{1}{2} \pi - (s+t)qr \right\}}{-2p \cos 2qr + p^2} \quad (\text{H, 171}).$$

$$23) \int \frac{\sin^{s-1} rx \cdot \cos^{t-1} rx \cdot \cos \left\{ (s-1) \frac{1}{2} \pi - (s+t)rx \right\}}{1-2p \cos 2rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \frac{2^{s-t} (1+p)^{t-1} (1-p)^{s-2} p \sin 2qr + \sin^{s-1} qr \cdot \cos^{t-1} qr \cdot \sin \left\{ (s-1) \frac{1}{2} \pi - (s+t)qr \right\}}{1-2p \cos 2qr + p^2} \quad (\text{H, 170}).$$

F. Alg. rat. fract. à dén. bin. $q^2 - x^2$; $[p^2 < 1]$.

Circ. Dir. en dén. trin. et fonct. polyn. au num.;

TABLE 198.

Lim. 0 et ∞ .

$$1) \int \frac{1-p \cos rx - p^a \cos arx + p^{a+1} \cos \{(a-1)rx\}}{1-2p \cos rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \frac{p \sin qr - p^a \sin aqr +}{1-2p \cos qr + p^2} \frac{+ p^{a+1} \sin \{(a-1)qr\}}{-2p \cos qr + p^2} \quad (\text{VIII, 502}).$$

$$2) \int \frac{\sin rx - p^{a-1} \sin arx + p^a \sin \{(a-1)rx\}}{1-2p \cos rx + p^2} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \frac{p - \cos qr + p^{a-1} \cos aqr -}{1-2p \cos qr + p^2} \frac{-p^a \cos \{(a-1)qr\}}{-2p \cos qr + p^2} \quad (\text{VIII, 503}).$$

$$3) \int \frac{\sin rx - p^{a-1} \sin arx + p^a \sin \{(a-1)rx\}}{1 - 2p \cos rx + p^2} \frac{\sin sx dx}{q^2 - x^2} = -\frac{\pi}{2q} \cos qs \frac{\sin qr - p^{a-1} \sin aqr + p^a \sin \{(a-1)qr\}}{1 - 2p \cos qr + p^2} [s \geq (a-1)r], = \frac{\pi}{2q} \frac{-\sin qr \cdot \cos qs - p^a \sin \{(s-dr-r)q\} + p^{a+1} \sin \{(s-dr)q\} + p^{a-1} \sin qs \cdot \cos aqr - p^a \sin qs \cdot \cos \{(a-1)qr\}}{1 - 2p \cos qr + p^2} [s < (a-1)r];$$

$$\left[d = \mathcal{L} \frac{s}{r} \right] \text{ (VIII, 503).}$$

$$4) \int \frac{1 - p \cos rx - p^a \cos arx + p^{a+1} \cos \{(a-1)rx\}}{1 - 2p \cos rx + p^2} \frac{x \sin sx dx}{q^2 - x^2} = -\frac{\pi}{2} \cos qs \frac{1 - p \cos qr - p^a \cos aqr + p^{a+1} \cos \{(a-1)qr\}}{1 - 2p \cos qr + p^2} [s > (a-1)r], = \frac{\pi}{4} p^{a-1} - \frac{\pi}{2} \cos \{(a-1)qr\} \frac{1 - p \cos qr - p^a \cos aqr + p^{a+1} \cos \{(a-1)qr\}}{1 - 2p \cos qr + p^2} [s = (a-1)r], = \frac{\pi}{2} \frac{\cos qs \cdot (p \cos qr - 1) + p^{a+1} \cos qr - p^{a+2} - p^a \sin qs \cdot \sin \{(a-1)qr\} - p^{a+1} \cos \{(s-dr-r)q\} - p^{a+2} \cos \{(s-dr)q\} - p^a \sin qs \cdot \sin aqr + p^{a+1} \sin qs \cdot \sin \{(a-1)qr\}}{1 - 2p \cos qr + p^2} [s < (a-1)r, \frac{s}{r} \text{ fract.}], = \frac{\pi}{4} p^a + \frac{\pi}{2} \frac{\cos qs \cdot (p \cos qr - 1) + p^{a+1} \cos qr - p^{a+2} - p^a \sin qs \cdot \sin aqr + p^{a+1} \sin qs \cdot \sin \{(a-1)qr\}}{1 - 2p \cos qr + p^2} [s < (a-1)r, \frac{s}{r} \text{ entier}]; \left[d = \mathcal{L} \frac{s}{r} \right] \text{ (VIII, 503).}$$

$$5) \int \frac{1 - p \cos rx - p^a \cos arx + p^{a+1} \cos \{(a-1)rx\}}{1 - 2p \cos rx + p^2} \frac{\cos sx dx}{q^2 - x^2} = \frac{\pi}{2q} \sin qs \frac{1 - p \cos qr - p^a \cos aqr + p^{a+1} \cos \{(a-1)qr\}}{1 - 2p \cos qr + p^2} [s \geq (a-1)r], = \frac{\pi}{2q} \frac{\sin qs \cdot (1 - p \cos qr) - p^{a+1} \sin \{(s-dr-r)q\} + p^{a+2} \sin \{(s-dr)q\} - p^a \cos qs \cdot \sin aqr + p^{a+1} \cos qs \cdot \sin \{(a-1)qr\}}{1 - 2p \cos qr + p^2} [s < (a-1)r];$$

$$\left[d = \mathcal{L} \frac{s}{r} \right] \text{ (VIII, 502, 503).}$$

$$6) \int \frac{\sin rx - p^{a-1} \sin arx + p^a \sin \{(a-1)rx\}}{1 - 2p \cos rx + p^2} \frac{x \cos sx dx}{q^2 - x^2} = \frac{\pi}{2} \sin qs \frac{\sin qr - p^{a-1} \sin aqr + p^a \sin \{(a-1)qr\}}{1 - 2p \cos qr + p^2} [s > (a-1)r], = -\frac{\pi}{4} p^{a-1} + \frac{\pi}{2} \sin qs \frac{\sin qr - p^{a-1} \sin aqr + p^a \sin \{(a-1)qr\}}{1 - 2p \cos qr + p^2} [s = (a-1)r], = \frac{\pi}{2} \frac{\sin qs \cdot \sin qr - p^a \cos \{(s-dr-r)q\} + p^{a+1} \cos \{(s-dr)q\} - p^{a-1} \cos aqr + p^a \cos \{(a-1)qr\}}{1 - 2p \cos qr + p^2} [s < (a-1)r, \frac{s}{r} \text{ fract.}], =$$

$$= -\frac{\pi}{4} p^{s-1} + \frac{\pi}{2} \frac{\sin qs \cdot \sin qr - p^s \cos qr + p^{s+1} - p^{s-1} \cos aqr + p^s \cos \{(a-1)qr\}}{1 - 2p \cos qr + p^2}$$

$$\left[s < (a-1)r, \frac{s}{r} \text{ entier} \right]; \left[d = \sum \frac{s}{r} \right] \text{ (VIII, 503, 504).}$$

$$7) \int \frac{1 - p \cos rx - p^s \cos srx + p^{s+1} \cos \{(s-1)rx\}}{(1 - 2p \cos rx + p^2)(1 - 2u \cos rx + u^2)} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q(1 - 2u \cos qr + u^2)} \\ \left\{ \frac{2u}{1 - u^2} \sin qr \frac{1 - p^s u^s}{1 - pu} + \frac{p \sin qr - p^s \sin sqr + p^{s+1} \sin \{(s-1)qr\}}{1 - 2p \cos qr + p^2} \right\} \text{ (H, 179).}$$

$$8) \int \frac{\sin rx - p^{s-1} \sin srx + p^s \sin \{(s-1)rx\}}{(1 - 2p \cos rx + p^2)(1 - 2u \cos rx + u^2)} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2p(1 - 2u \cos qr + u^2)} \\ \left\{ \frac{1 - p^s u^s}{1 - pu} - \frac{1 - p \cos qr - p^s \cos sqr + p^{s+1} \cos \{(s-1)qr\}}{1 - 2p \cos qr + p^2} \right\} \text{ (H, 179).}$$

$$1) \int \frac{\sin 2srx}{\sin rx} \frac{dx}{(q^2 - x^2)^2} = \frac{\pi}{4q^3} \left\{ 2 \frac{\sin^2 sqr}{\sin qr} - sqr \frac{\sin 2sqr}{\sin qr} + 2qr \frac{\cos qr}{\sin^3 qr} \sin^2 sqr \right\} \text{ (H, 132).}$$

$$2) \int \frac{\sin 2srx}{\sin rx} \frac{x^2 dx}{(q^2 - x^2)^2} = \frac{\pi}{4q} \left\{ -2 \frac{\sin^2 sqr}{\sin qr} - sqr \frac{\sin 2sqr}{\sin qr} + 2qr \frac{\cos qr}{\sin^3 qr} \sin^2 sqr \right\} \text{ (H, 132).}$$

$$3) \int \frac{\sin^2 srx}{\sin rx} \frac{x dx}{(q^2 - x^2)^2} = \frac{\pi r}{4q} \left\{ \frac{\cos qr}{\sin^3 qr} \sin 2sqr - sqr \frac{\cos 2sqr}{\sin qr} \right\} \text{ (H, 132).}$$

$$4) \int \frac{\sin^2 srx}{\sin rx} \frac{x^2 dx}{(q^2 - x^2)^2} = \frac{\pi}{4} \left\{ \frac{\sin 2sqr}{\sin 2qr} + 2sqr \frac{\cos 2sqr}{\sin qr} - qr \frac{\cos qr}{\sin^3 qr} \sin 2sqr \right\} \text{ (H, 132).}$$

$$5) \int \frac{\sin rx}{1 - 2p \cos rx + p^2} \frac{x dx}{(q^2 - x^2)^2} = -\frac{1 - p^2}{4q} \frac{\pi r \sin qr}{(1 - 2p \cos qr + p^2)^2} \text{ (H, 137).}$$

$$6) \int \frac{\sin rx}{1 - 2p \cos rx + p^2} \frac{x^2 dx}{(q^2 - x^2)^2} = \frac{\pi}{2} \frac{\cos qr - p}{1 - 2p \cos qr + p^2} - \frac{1 - p^2}{4} \frac{\pi qr \sin qr}{(1 - 2p \cos qr + p^2)^2} \\ \text{ (H, 137).}$$

$$7) \int \frac{1 - p \cos rx}{1 - 2p \cos rx + p^2} \frac{dx}{(q^2 - x^2)^2} = \frac{p\pi}{4q^3} \frac{\sin qr}{1 - 2p \cos qr + p^2} - \frac{\pi pr}{4q^3} \frac{(1 + p^2) \cos qr - 2p}{(1 - 2p \cos qr + p^2)^2} \\ \text{ (H, 137).}$$

$$8) \int \frac{1 - p \cos rx}{1 - 2p \cos rx + p^2} \frac{x^2 dx}{(q^2 - x^2)^2} = -\frac{p\pi}{4q} \frac{\sin qr}{1 - 2p \cos qr + p^2} - \frac{1}{4} \pi pr \frac{(1 + p^2) \cos qr - 2p}{(1 - 2p \cos qr + p^2)^2} \\ \text{ (H, 137).}$$

F. Alg. rat. fract. à dén. bin. $(q^2 - x^2)^2$;
Circ. Dir. en dén.; $[p^2 < 1]$. TABLE 199, suite.

Lim. 0 et ∞ .

$$\frac{\sin rx - p \sin \{(s-1)rx\}}{1 - 2p \cos rx + p^2} \frac{x dx}{(q^2 - x^2)^2} = \frac{rx}{2pq} \frac{s \sin sqr - p[2s \sin \{(s-1)qr\} + (s-1) \sin \{(s+1)qr\}] + p^2[2(s-1) \sin sqr + s \sin \{(s-2)qr\}] - (s-1)p^2 \sin \{(s-1)qr\}}{(1 - 2p \cos qr + p^2)^2} \quad (\text{H, 138}).$$

$$10) \int \frac{\sin rx - p \sin \{(s-1)rx\}}{1 - 2p \cos rx + p^2} \frac{x^2 dx}{(q^2 - x^2)^2} = \frac{\pi}{4p} \left\{ 2p \frac{\cos sqr - p \cos \{(s-1)qr\}}{1 - 2p \cos qr + p^2} - qr \frac{s \sin sqr - p[2s \sin \{(s-1)qr\} + (s-1) \sin \{(s+1)qr\}] + p^2[2(s-1) \sin sqr + s \sin \{(s-2)qr\}] - (s-1)p^2 \sin \{(s-1)qr\}}{(1 - 2p \cos qr + p^2)^2} \right\} \quad (\text{H, 138}).$$

$$11) \int \frac{\cos rx - p \cos \{(s-1)rx\}}{1 - 2p \cos rx + p^2} \frac{dx}{(q^2 - x^2)^2} = \frac{\pi}{4q^3} \left\{ \frac{\sin sqr - p \sin \{(s-1)qr\}}{1 - 2p \cos qr + p^2} - \frac{qr}{p} \frac{s \cos sqr - p[2s \cos \{(s-1)qr\} + (s-1) \cos \{(s+1)qr\}] + p^2[2(s-1) \cos sqr + s \cos \{(s-2)qr\}] - (s-1)p^2 \cos \{(s-1)qr\}}{(1 - 2p \cos qr + p^2)^2} \right\} \quad (\text{H, 137}).$$

$$12) \int \frac{\cos rx - p \cos \{(s-1)rx\}}{1 - 2p \cos rx + p^2} \frac{x^2 dx}{(q^2 - x^2)^2} = -\frac{\pi}{4q} \left\{ \frac{\sin sqr - p \sin \{(s-1)qr\}}{1 - 2p \cos qr + p^2} + \frac{qr}{p} \frac{s \cos sqr - p[2s \cos \{(s-1)qr\} + (s-1) \cos \{(s+1)qr\}] + p^2[2(s-1) \cos sqr + s \cos \{(s-2)qr\}] - (s-1)p^2 \cos \{(s-1)qr\}}{(1 - 2p \cos qr + p^2)^2} \right\} \quad (\text{H, 137}).$$

F. Alg. rat. fract. à dén. trinôme;
Circ. Dir. en dén.; $[p^2 < 1]$. TABLE 200.

Lim. 0 et ∞ .

$$1) \int \frac{1}{1 - 2p \cos rx + p^2} \frac{dx}{x^4 + 2q^2 x^2 \cos 2\lambda + q^4} = \frac{\pi \operatorname{Cosec} 2\lambda}{2q^2(1-p^2)} \frac{(e^{qr \cos \lambda} - p^2 e^{-qr \cos \lambda}) \sin \lambda + 2p \sin(qr \sin \lambda) \cos \lambda}{e^{qr \cos \lambda} - 2p \cos(qr \sin \lambda) + p^2 e^{-qr \cos \lambda}} \quad (\text{VIII, 478}).$$

$$2) \int \frac{\sin rx}{1 - 2p \cos rx + p^2} \frac{x dx}{x^4 + 2q^2 x^2 \cos 2\lambda + q^4} = \frac{\pi \operatorname{Cosec} 2\lambda}{2q^2} \frac{\sin(qr \sin \lambda)}{e^{qr \cos \lambda} - 2p \cos(qr \sin \lambda) + p^2 e^{-qr \cos \lambda}} \quad (\text{VIII, 477}).$$

$$3) \int \frac{\cos rx}{1-2p \cos rx + p^2} \frac{dx}{x^4 + 2q^2 x^2 \cos 2\lambda + q^4} = \frac{\pi \operatorname{Cosec} 2\lambda}{2q^2(1-p^2)} \frac{2 \cos(qr \sin \lambda) \cdot \sin \lambda +}{e^{qr \cos \lambda} -} \\ + p(e^{qr \cos \lambda} - e^{-qr \cos \lambda}) + (1+p^2) \sin(qr \sin \lambda - \lambda) \\ - 2p \cos(qr \sin \lambda) + p^2 e^{-qr \cos \lambda} \quad (\text{VIII, 478}).$$

$$4) \int \frac{\sin rx}{1-2p \cos 2rx + p^2} \frac{x dx}{x^4 + 2q^2 x^2 \cos 2\lambda + q^4} = \frac{\pi}{2q^2} \frac{1+p e^{-2qr \cos \lambda}}{(1+p) \sin 2\lambda} \frac{e^{qr \cos \lambda} - 2p \cos(2qr \sin \lambda) +}{\sin(qr \sin \lambda)} \\ + p^2 e^{-2qr \cos \lambda} \quad \text{V. T. 200, N. 2.}$$

$$5) \int \frac{x^2 - p^2 \sin^2 x}{x^4 - 2p^2 x^2 \sin^2 x \cos 2x + p^4 \sin^4 x} \sin^2 x dx = \frac{\pi}{2p} \frac{e^p - e^{-p}}{e^p + e^{-p}}$$

Hamilton, L. & E. Phil. Mag. 23, 360.

$$1) \int \frac{\sin^2 srx}{\sin rx} \frac{dx}{x(q^2 + x^2)} = \frac{\pi}{2q^2} \left[s + \frac{1 - e^{-2sqr}}{e^{qr} - e^{-qr}} \right] \quad (\text{H, 175}).$$

$$2) \int \frac{\sin^2 srx}{\sin rx} \frac{dx}{x(q^2 - x^2)} = \frac{\pi}{4q^2} \left[2s - \frac{\sin 2sqr}{\sin qr} \right] \quad (\text{H, 175}).$$

$$3) \int \frac{\sin^2 srx}{\sin rx} \frac{dx}{x(4q^4 + x^4)} = \frac{\pi}{4q^4} \left[s - \frac{(1 - e^{-2sqr}) e^{qr} \cos qr - e^{-(2s-1)qr} \cos \{(2s+1)qr\} +}{e^{2qr} -} \right. \\ \left. + e^{-(2s+1)qr} \cos \{(2s-1)qr\} \right] \quad (\text{H, 175}).$$

$$4) \int \frac{\sin^2 srx}{\sin rx} \frac{dx}{x(q^4 - x^4)} = \frac{\pi}{8q^4} \left[4s + 2 \frac{1 - e^{-2sqr}}{e^{qr} - e^{-qr}} - \frac{\sin 2sqr}{\sin qr} \right] \quad (\text{H, 175}).$$

$$5) \int \frac{\sin srx}{1-2p \cos rx + p^2} \frac{dx}{x(q^2 + x^2)} = \frac{\pi}{2q^2} \left[\frac{1-p^s}{(1-p)^2} + \frac{p^s - e^{-sqr}}{(1-pe^{qr})(1-pe^{-qr})} \right] \quad (\text{H, 178}).$$

$$6) \int \frac{\sin srx}{1-2p \cos rx + p^2} \frac{dx}{x(q^2 - x^2)} = \frac{\pi}{2q^2} \left[\frac{1-p^s}{(1-p)^2} + \frac{p^s - \cos sqr}{1-2p \cos qr + p^2} \right] \quad (\text{H, 178}).$$

$$7) \int \frac{\sin srx}{1-2p \cos rx + p^2} \frac{dx}{x(4q^4 + x^4)} = \frac{\pi}{8q^4} \left[\frac{1-p^s}{(1-p)^2} + \frac{p^{s-1} - 1}{1-p} \frac{e^{-sqr}}{1-2pe^{-qr} \cos qr + p^2 e^{-2qr}} - \right. \\ \left. - \frac{p^s e^{qr} (p \cos qr - e^{-qr}) (1 - e^{-2qr}) - p e^{-(s-1)qr} \cos \{(s+1)qr\} + (1+p^s)}{(1-2pe^{-qr} \cos qr + p^2 e^{-2qr})} \right. \\ \left. - \frac{e^{-sqr} \cos sqr - p e^{-(s+1)qr} \cos \{(s-1)qr\}}{(1-2pe^{qr} \cos qr + p^2 e^{2qr})} \right] \quad (\text{H, 178}).$$

$$\int \frac{\sin rx}{-2p \cos rx + p^2} \frac{dx}{x(q^2 - x^2)} = \frac{\pi}{4q^2} \left[2 \frac{1-p^2}{(1-p)^2} + \frac{p^2 - e^{-qr}}{(1-pe^{-qr})(1-pe^{-qr})} + \frac{p^2 - \cos qr}{1-2p \cos qr + p^2} \right] \text{ (H, 178).}$$

$$\frac{\sin 2rx}{2p \cos 2rx + p^2} \frac{dx}{x(q^2 + x^2)} = \frac{1}{2} \frac{\pi}{1+p} \frac{e^{qr} - e^{-qr}}{e^{qr} + p e^{-qr}} \text{ V. T. 185, N. 3 et T. 192, N. 2.}$$

$$\frac{x^2 - p^2 \sin^2 x}{1 - p x \sin 2x + p^2 \sin^2 x} \sin x \frac{dx}{x} = \pi \left(e^{-\frac{1}{2}} - \frac{1}{2} \right) \text{ Bronwin, L. \& E. Phil. Mag. 24, 491.}$$

$$1) \int \frac{\sin px}{x+q} dx = \pi \cos pq \text{ (IV, 315).}$$

$$2) \int \frac{\sin px}{x-r \pm qi} dx = \pi e^{-p(r \pm qi)} \text{ (IV, 315).}$$

$$3) \int \frac{\sin px}{x-q} dx = \pi \cos pq \text{ (IV, 315).}$$

$$4) \int \frac{\cos px}{x+q} dx = \pi \sin pq \text{ (IV, 316).}$$

$$5) \int \frac{\cos px}{x-r \pm qi} dx = \mp \pi i e^{-p(r \pm qi)} \text{ (IV, 316).}$$

$$6) \int \frac{\cos px}{x-q} dx = -\pi \sin pq \text{ (IV, 316).}$$

$$7) \int \frac{\sin x}{(q \pm xi)^{1-p}} dx = \mp e^{-q} \Gamma(p) i \sin p\pi \text{ (IV, 315).}$$

$$8) \int \frac{\cos x}{(q \pm xi)^{1-p}} dx = e^{-q} \Gamma(p) \sin p\pi \text{ (IV, 316).}$$

$$9) \int \frac{\sin \{r(p-x)\}}{q^2 + x^2} dx = \pi e^{-qr} \sin pr \text{ (IV, 315).}$$

$$10) \int \frac{x \sin px}{q^2 + x^2} dx = \pi e^{-p^2 q} \text{ (IV, 315).}$$

$$11) \int \frac{\cos \{r(p-x)\}}{q^2 + x^2} dx = \pi e^{-qr} \cos pr \text{ (IV, 317).}$$

$$12) \int \frac{p+qx}{r+2sx+x^2} \sin tx dx = \left(\frac{qs-p}{\sqrt{r-s^2}} \sin st + q \cos st \right) \pi e^{-t\sqrt{r-s^2}} \text{ (IV, 315).}$$

$$13) \int \frac{p+qx}{r+2sx+x^2} \cos tx dx = \left(\frac{p-qs}{\sqrt{r-s^2}} \cos st + q \sin st \right) \pi e^{-t\sqrt{r-s^2}} \text{ (IV, 317).}$$

$$14) \int \frac{\cos \{(q-1)\lambda\} - x \cos q\lambda}{1-2x \cos \lambda + x^2} \cos rx dx = \pi e^{-r \sin \lambda} \sin(q\lambda + r \cos \lambda) \text{ (IV, 317).}$$

$$15) \int \cos \left(qx - \frac{qr}{x} \right) \frac{dx}{1 + \left(x - \frac{r}{x} \right)^2} = \pi e^{-q} \text{ Boole, C. \& D. M. J. 4, 14.}$$

$$16) \int \frac{\cos \left\{ p \left(x - \frac{q_1}{x-r_1} - \dots - \frac{q_n}{x-r_n} \right) \right\}}{1 + \left(x - \frac{q_1}{x-r_1} - \dots - \frac{q_n}{x-r_n} \right)^2} dx = \pi e^{-p} \text{ Boole, Phil. Trans. 1857.}$$

$$17) \int \frac{(e^{qr} + e^{-qr}) \cos qx - (e^{qr} - e^{-qr}) i \sin qx}{p^2 + x^2 - r^2 + 2rx i} dx = \pi \frac{e^{-pr} - e^{pr}}{p} [r > p], = \frac{2\pi}{p} e^{-pr} [r < p] \quad (\text{IV, 318}).$$

$$18) \int \frac{(p + r^2 + x^2) 2x \sin 2qx - r(p^2 - r^2 - x^2)(e^{2qr} - e^{-2qr})}{e^{2qr} + 2 \cos 2qx + e^{-2qr}} \frac{dx}{\{x^2 + (p-r)^2\} \{x^2 + (p+r)^2\}} = \pi [r > p], = \frac{2\pi}{e^{2pr} + 1} [r < p] \quad (\text{IV, 318}).$$

$$1) \int \sin px \frac{dx}{x} = \frac{\pi}{2} - \text{Si}(p) \quad (\text{VIII, 289}^*).$$

$$2) \int \sin \left\{ p \left(x - \frac{1}{x} \right) \right\} \frac{dx}{x} = \text{Ci}(p) \cdot \sin p + \cos p \cdot \left\{ \frac{1}{2} \pi - \text{Si}(p) \right\} \quad (\text{IV, 318}).$$

$$3) \int \sin \left\{ p \left(x - \frac{1}{x} \right) \right\} \cdot \left(x - \frac{1}{x} \right) dx \sqrt{x} = e^{-1/p} \sqrt{\frac{\pi}{2p}} \quad (\text{IV, 318}).$$

$$4) \int \sin \left\{ p \left(x - \frac{1}{x} \right) \right\} \frac{x-1}{x} \frac{dx}{\sqrt{x}} = e^{-1/p} \sqrt{\frac{\pi}{2p}} \quad (\text{VIII, 446}).$$

$$5) \int \cos px \frac{dx}{x} = -\text{Ci}(p) \quad (\text{VIII, 289}^*).$$

$$6) \int \cos \left\{ p \left(x - \frac{1}{x} \right) \right\} \frac{dx}{x} = -\text{Ci}(p) \cdot \cos p + \sin p \cdot \left\{ \frac{1}{2} \pi - \text{Si}(p) \right\} \quad (\text{IV, 320}).$$

$$7) \int \cos \left\{ p \left(x - \frac{1}{x} \right) \right\} \cdot \left(x + \frac{1}{x} \right) dx \sqrt{x} = e^{-1/p} \sqrt{\frac{\pi}{2p}} \quad (\text{IV, 320}).$$

$$8) \int \cos \left\{ p \left(x - \frac{1}{x} \right) \right\} \frac{x+1}{x} \frac{dx}{\sqrt{x}} = e^{-1/p} \sqrt{\frac{\pi}{2p}} \quad (\text{VIII, 446}).$$

$$9) \int \sin \left\{ p \left(x - \frac{1}{x} \right) \right\} \frac{4+x+\frac{1}{x}}{\left(x+\frac{1}{x} \right)^2} \left(\sqrt{x} - \frac{1}{\sqrt{x}} \right) \frac{dx}{x} = e^{-1/p} \sqrt{2p} \pi \quad (\text{IV, 319}).$$

$$10) \int \cos \left\{ p \left(x - \frac{1}{x} \right) \right\} \frac{4 - x - \frac{1}{x}}{\left(x + \frac{1}{x} \right)^2} \left(\sqrt{x + \frac{1}{x}} \right) \frac{dx}{x} = e^{-2p} \sqrt{2px} \quad (\text{IV}, 321).$$

$$11) \int \sin \left\{ p \left(x - \frac{1}{x} \right) \right\} \frac{\{x+1-(x-1)i\}^{-a} - \{x+1+(x-1)i\}^{-a}}{2i} \left(x + \frac{1}{x} \right) x^{\frac{1}{2}a-1} dx =$$

$$= \frac{\pi p^{\frac{1}{2}a-1} e^{-2p}}{2^{\frac{1}{2}a+1} \Gamma\left(\frac{1}{2}a\right)} \quad (\text{VIII}, 445).$$

$$12) \int \cos \left\{ p \left(x - \frac{1}{x} \right) \right\} \frac{\{x+1-(x-1)i\}^{-a} + \{x+1+(x-1)i\}^{-a}}{2} \left(x + \frac{1}{x} \right) x^{\frac{1}{2}a-1} dx =$$

$$= \frac{\pi p^{\frac{1}{2}a-1} e^{-2p}}{2^{\frac{1}{2}a+1} \Gamma\left(\frac{1}{2}a\right)} \quad (\text{VIII}, 445).$$

$$13) \int \sin \left\{ p \left(x^2 - \frac{1}{x^2} \right) \right\} \cdot \left(x - \frac{1}{x} \right) \frac{dx}{x} = \frac{1}{2} e^{-2p} \sqrt{\frac{\pi}{2p}} \quad \text{V. T. 203, N. 4.}$$

$$14) \int \cos \left\{ p \left(x^2 - \frac{1}{x^2} \right) \right\} \cdot \left(x + \frac{1}{x} \right) \frac{dx}{x} = \frac{1}{2} e^{-2p} \sqrt{\frac{\pi}{2p}} \quad \text{V. T. 203, N. 8.}$$

$$15) \int \sin px \frac{dx}{x^{2a}} = \frac{(-1)^a}{1^{2a-1/1}} p^{2a-1} \left(A + lp - \sum_1^{2a-1} \frac{1}{n} \right) - \frac{1}{2} \sum_1^{a-1} \frac{(-1)^n}{1^{2n-1/1}} \frac{p^{2n-1}}{a-n} -$$

$$- \sum_0^{\infty} \frac{(-1)^{a+n}}{1^{2a+2n+1/1}} \frac{p^{2a+2n}}{2n+1} \quad (\text{IV}, 347*).$$

$$16) \int \cos px \frac{dx}{x^{2a+1}} = \frac{(-1)^{a-1}}{1^{2a/1}} p^{2a} \left(A + lp - \sum_1^{2a} \frac{1}{n} \right) + \frac{1}{2} \sum_0^{a-1} \frac{(-1)^n}{1^{2n/1}} \frac{p^{2n}}{a-n} - \sum_1^{\infty} \frac{(-1)^{a+n}}{1^{2a+2n/1}} \frac{p^{2a+2n}}{2n}$$

(IV, 347*).

$$1) \int x \operatorname{Tang} x dx = -\frac{\pi}{8} \ln 2 + \frac{1}{2} \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad (\text{IV}, 324).$$

$$2) \int x \operatorname{Cot} x dx = \frac{\pi}{8} \ln 2 + \frac{1}{2} \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad \text{V. T. 285, N. 1.}$$

$$3) \int x \operatorname{Tang}^2 x dx = \frac{1}{4} \pi - \frac{1}{32} \pi^2 - \frac{1}{2} \ln 2 \quad \text{V. T. 204, N. 9.}$$

- 4) $\int x^a \operatorname{Tang} x dx = -\frac{1}{2} \left(\frac{\pi}{4}\right)^a \ln 2 + \frac{1^{a/1}}{2^a} \operatorname{Cos} \frac{1}{2} a \pi \cdot \sum_1^{\infty} \frac{(-1)^{n-1}}{n^{a+1}} + \frac{1}{2^a} \sum_1^{\infty} (-1)^{n-1} \left\{ a^{2n-1/1} \left(\frac{\pi}{2}\right)^{a-2n+1} \sum_0^{\infty} \frac{(-1)^m}{(2m+1)^{2n}} + a^{2n/1} \left(\frac{\pi}{2}\right)^{a-2n} \sum_0^{\infty} \frac{(-1)^{m+1}}{(2m)^{2n+1}} \right\} \text{ (IV, 325*)}.$
- 5) $\int x^a \operatorname{Cot} x dx = \frac{1}{2} \left(\frac{\pi}{4}\right)^a \ln 2 + \frac{1^{a/1}}{2^a} \operatorname{Cos} \frac{1}{2} a \pi \cdot \sum_1^{\infty} \frac{(-1)^{n-1}}{n^{a+1}} + \frac{1}{2^a} \sum_1^{\infty} (-1)^{n-1} \left\{ a^{2n-1/1} \left(\frac{\pi}{2}\right)^{a-2n+1} \sum_0^{\infty} \frac{(-1)^m}{(2m+1)^{2n}} + a^{2n/1} \left(\frac{\pi}{2}\right)^{a-2n} \sum_0^{\infty} \frac{(-1)^{m+1}}{(2m)^{2n+1}} \right\} \text{ (IV, 325*)}.$
- 6) $\int x \cdot \operatorname{Cot} x dx = \left(\frac{\pi}{4}\right)^2 \left\{ 1 - \sum_1^{\infty} \frac{2}{p+2m} \sum_1^{\infty} \frac{1}{(4n)^{2m}} \right\} \text{ (IV, 325*)}.$
- 7) $\int x \operatorname{Tang}^2 x dx = \frac{\pi}{4} - \frac{1}{2} + \frac{\pi}{8} \ln 2 - \frac{1}{2} \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 231, N. 21.}$
- 8) $\int \left(\frac{\pi}{4} - x \operatorname{Tg} x\right) \operatorname{Tg} x dx = \frac{1}{2} \ln 2 + \frac{1}{32} \pi^2 - \frac{\pi}{4} + \frac{\pi}{8} \ln 2 \text{ V. T. 232, N. 9.}$
- 9) $\int \frac{x}{\operatorname{Cos}^2 x} dx = \frac{1}{4} \pi - \frac{1}{2} \ln 2 \text{ (VIII, 215).}$
- 10) $\int \frac{x^2}{\operatorname{Sin}^2 x} dx = \frac{1}{4} \pi \ln 2 - \frac{1}{16} \pi^2 + \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 204, N. 3.}$
- 11) $\int x \operatorname{Sin} x \frac{dx}{\operatorname{Cos}^2 x} = \frac{\pi}{4} - \frac{1}{2} \text{ V. T. 229, N. 6.}$
- 12) $\int x^2 \operatorname{Sin}^2 x \frac{dx}{\operatorname{Cos}^2 x} = \frac{1}{3} \left\{ -\frac{\pi}{4} \ln 2 - \frac{\pi}{2} + \frac{1}{16} \pi^2 + 1 + \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \right\} \text{ V. T. 229, N. 9.}$
- 13) $\int \frac{x^2}{\operatorname{Cos}^2 x} \operatorname{Tg} x dx = \frac{1}{2} \ln 2 - \frac{1}{4} \pi + \frac{1}{16} \pi^2 \text{ V. T. 204, N. 3.}$
- 14) $\int \frac{x^{p+1}}{\operatorname{Sin}^2 x} dx = -\left(\frac{1}{4} \pi\right)^{p+1} + (p+1) \left(\frac{\pi}{4}\right)^p \left\{ 1 - \sum_1^{\infty} \frac{2}{p+2m} \sum_1^{\infty} \frac{1}{(4n)^{2m}} \right\} \text{ V. T. 204, N. 6.}$
- 15) $\int \frac{x \operatorname{Sin}^{q-1} x}{\operatorname{Cos}^{q+1} x} dx = \frac{\pi}{4q} + \frac{1}{q} \sum_0^{\infty} \frac{(-1)^{n-1}}{q+2n+1} \text{ V. T. 34, N. 1.}$
- 16) $\int \frac{x \operatorname{Sin}^{a-1} x}{\operatorname{Cos}^{2a+1} x} dx = \frac{1}{2(2a+1)} \left\{ \frac{\pi}{2} + (-1)^{a-1} \ln 2 + \sum_0^{\infty} \frac{(-1)^{n-1}}{a-n} \right\} \text{ V. T. 34, N. 3.}$
- 17) $\int \frac{x \operatorname{Sin}^{2a-1} x}{\operatorname{Cos}^{2a+1} x} dx = \frac{\pi}{8a} (1 - \operatorname{Cos} a \pi) + \frac{1}{2a} \sum_0^{\infty} \frac{(-1)^{n-1}}{2a-2n-1} \text{ V. T. 34, N. 2.}$
- 18) $\int \left(\frac{\pi}{4} - x\right) \frac{dx}{\operatorname{Cos} 2x} = \frac{1}{2} \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 232, N. 4.}$

- 19) $\int \left(\frac{\pi}{4} - x \right) \frac{Tg x dx}{\cos 2x} = -\frac{\pi}{8} l2 + \frac{1}{2} \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 232, N. 5.
- 20) $\int \left(\frac{\pi}{4} - x \text{Tang} x \right) \frac{dx}{\cos 2x} = \frac{\pi}{8} l2 + \frac{1}{2} \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 232, N. 6.
- 21) $\int \left(\frac{\pi}{4} - x \text{Tang}^2 x \right) \frac{dx}{\cos 2x} = \frac{\pi}{4} - \frac{1}{2} + \frac{\pi}{8} l2 + \frac{1}{2} \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 232, N. 7.
- 22) $\int \frac{(x - \frac{1}{2}\pi) Tg^2 x + x}{\cos 2x} \frac{dx}{Tg x} = \frac{1}{4} \pi l2$ V. T. 232, N. 1.
- 23) $\int \frac{\cos x - \sin x}{\sin x + \cos x} x dx = \frac{\pi}{4} l2 - \frac{1}{2} \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 235, N. 21.
- 24) $\int \frac{x}{(\cos x + p \sin x)^2} dx = \frac{1}{1+p^2} l \frac{1+p}{\sqrt{2}} + \frac{\pi}{4} \frac{1-p}{(1+p)(1+p^2)}$ (IV, 323).
- 25) $\int \frac{x \cos 2x}{(1 + \sin x \cdot \cos x)^2} dx = \pi \frac{2 - \sqrt{3}}{6\sqrt{3}}$ (IV, 323).
- 26) $\int \frac{x \cos 2x}{(1 - \sin x \cdot \cos x)^2} dx = \pi \frac{3\sqrt{3} - 4}{6\sqrt{3}}$ (IV, 323).
- 27) $\int \frac{x \sin 4x}{(1 - \sin^2 x \cdot \cos^2 x)^2} dx = \pi \frac{2 - \sqrt{3}}{3}$ V. T. 204, N. 25, 26.
- 28) $\int \frac{x}{\sin x + \cos x} \frac{dx}{\cos x} = \frac{1}{8} \pi l2$ V. T. 287, N. 1.
- 29) $\int \frac{x}{\sin x + \cos x} \frac{dx}{\sin x} = -\frac{\pi}{8} l2 + \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 235, N. 11.
- 30) $\int \frac{\sin x}{\sin x + \cos x} \frac{x dx}{\cos^2 x} = -\frac{\pi}{8} l2 + \frac{\pi}{4} - \frac{1}{2} l2$ V. T. 231, N. 18.
- 31) $\int \frac{1 + 2 \cos \lambda \cdot \sin 2x \cdot \sin^2 x}{(1 + \cos \lambda \cdot \sin 2x)^2} \frac{x}{\cos^2 x} dx = \frac{\pi}{4(1 + \cos \lambda)} + \frac{1}{2} \lambda \cot \lambda - l \left(2 \cos \frac{1}{2} \lambda \right)$
V. T. 36, N. 1.
- 32) $\int \frac{x Tg^2 x}{\sqrt{\cos 2x}} dx = \sqrt{2} \cdot \left\{ F \left(\sin \frac{\pi}{4} \right) - E \left(\sin \frac{\pi}{4} \right) \right\}$ V. T. 38, N. 1.
- 33) $\int \frac{x}{\sin x \cdot \sqrt{\cos 2x}} dx = \frac{1}{2} \pi l(1 + \sqrt{2})$ V. T. 244, N. 11.
- 34) $\int \frac{\sqrt{Tg x} - \sqrt{\cot x}}{\sin 2x} x dx = \frac{1}{2} \pi (1 - \sqrt{2})$ V. T. 38, N. 2.

- 1) $\int x \cot x dx = \frac{1}{2} \pi \log 2$ (VIII, 612).
- 2) $\int x \operatorname{Tg} x dx = \infty$ V. T. 306, N. 1.
- 3) $\int x \cos^p x \cdot \operatorname{Tg} x dx = \frac{\pi}{p \cdot 2^{p+1}} \frac{\Gamma(p+1)}{\{\Gamma(\frac{1}{2}p+1)\}^2}$ V. T. 41, N. 3.
- 4) $\int x \cos^{q-1} x \cdot \sin \{(q+1)x\} dx = \frac{\pi}{q \cdot 2^{q+1}}$ (VIII, 430).
- 5) $\int x \cos^q x \cdot \sin \{(q+2a)x\} dx = -\frac{\pi \cos a\pi}{2^{q+2}} \frac{1^{a-1/2}}{q^{a-1/2}}$ (VIII, 430).
- 6) $\int x \cos^{p-1} x \cdot \sin qx dx = \frac{\pi}{2^{p+1}} \Gamma(p) \frac{Z'(\frac{p+q+1}{2}) - Z'(\frac{p-q+1}{2})}{\Gamma(\frac{p+q+1}{2}) \cdot \Gamma(\frac{p-q+1}{2})}$ (IV, 324).
- 7) $\int x^p \cot x dx = \left(\frac{\pi}{2}\right)^p \left\{1 - \sum_1^{\infty} \frac{2}{p+2m} \sum_1^{\infty} \frac{1}{(2n)^{2m}}\right\}$ (IV, 325).
- 8) $\int x^a \cot x dx = \left(\frac{\pi}{2}\right)^a \log 2 + \cos \frac{1}{2} a\pi \cdot 1^{a/2} \sum_1^{\infty} \left\{\frac{1}{n^{a+1}} + \frac{(-1)^n}{n^{a+1}}\right\} + 2 \sum_1^{\infty} (-1)^n (a-1)^{2n-1/2-1} \left(\frac{\pi}{2}\right)^{a-2n} \sum_1^{\infty} \frac{(-1)^{n-1}}{(2m)^{2n+1}}$ (IV, 326).
- 9) $\int x \sin(p \operatorname{Tg} x) dx = \frac{1}{4} \pi e^{-p} \{A + \log 2p - e^{2p} \operatorname{Ei}(-2p)\}$ V. T. 446, N. 2.
- 10) $\int x \cos(p \operatorname{Tg} x) \cdot \operatorname{Tg} x dx = -\frac{1}{4} \pi e^{-p} \{A + \log 2p + e^{2p} \operatorname{Ei}(-2p)\}$ V. T. 446, N. 4.

- 1) $\int \frac{x}{\sin x} dx = 2 \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2}$ (IV, 325).
- 2) $\int \frac{x^a}{\sin x} dx = \cos \frac{1}{2} a\pi \cdot 1^{a/2} \sum_1^{\infty} \left\{\frac{1}{n^{a+1}} + \frac{(-1)^{n-1}}{n^{a+1}}\right\} + 2 \sum_1^{\infty} (-1)^{n-1} a^{2n-1/2-1} \left(\frac{\pi}{2}\right)^{a-2n-1} \sum_1^{\infty} \frac{(-1)^{m-1}}{(2m-1)^{2n}}$ (IV, 325).
- 3) $\int \frac{x^p}{\sin x} dx = \left(\frac{\pi}{2}\right)^p \left\{1 + \sum_1^{\infty} \frac{1}{2^{2m-2}} \frac{2^{2m-1} - 1}{p+2m} \sum_1^{\infty} \frac{1}{(4n^2)^m}\right\}$ (IV, 325).

$$4) \int \frac{x \cos x}{\sin x} dx = \frac{1}{2} \pi \log 2 \text{ (VIII, 612).}$$

$$5) \int \frac{x^2}{\sin^2 x} dx = \pi \log 2 \text{ (VIII, 589).}$$

$$6) \int \frac{x^{p+1}}{\sin^2 x} dx = (p+1) \left(\frac{\pi}{2}\right)^p \left\{ 1 - \sum_{n=1}^{\infty} \frac{2}{p+2n} \sum_{m=1}^{\infty} \frac{1}{(4n^2)^m} \right\} \text{ V. T. 205, N. 7.}$$

$$7) \int \frac{x^2 \cos x}{\sin^2 x} dx = -\frac{1}{4} \pi^2 + 4 \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 206, N. 1.}$$

$$8) \int \frac{x^3 \cos x}{\sin^2 x} dx = -\frac{1}{16} \pi^3 + \frac{3}{2} \pi \log 2 \text{ V. T. 206, N. 5.}$$

$$9) \int \frac{1-x \cot x}{\sin^2 x} dx = \frac{1}{4} \pi \text{ (IV, 326).} \quad 10) \int \frac{4x^2 \cos x + (2\pi - x)x}{\sin x} dx = \pi^2 \log 2 \text{ (IV, 326).}$$

$$11) \int \frac{x \sin^p x}{\Gamma x} dx = \frac{\pi}{2p} - \frac{2^{p-1}}{p} \frac{\left\{ \Gamma\left(\frac{p+1}{2}\right) \right\}^2}{\Gamma(p+1)} \text{ V. T. 40, N. 3.}$$

$$12) \int \frac{x}{\Gamma x \cdot \cos 2x} dx = \frac{1}{4} \pi \log 2 \text{ V. T. 250, N. 6.}$$

$$13) \int \frac{x}{\Gamma^p x \cdot \sin 2x} dx = \frac{\pi}{4p} \sec \frac{1}{2} p \pi [p < 1] \text{ V. T. 45, N. 19.}$$

$$14) \int \sin(q \cot x) \frac{x}{\sin^2 x} dx = \frac{e^{-q} - 1}{2q} \pi \text{ V. T. 347, N. 1.}$$

$$15) \int \cos(q \Gamma x) \frac{x}{\sin 2x} dx = -\frac{\pi}{4} \text{Ei}(-q) \text{ V. T. 445, N. 1.}$$

$$1) \int \frac{x \sin x}{\cos^2 x - \sin^2 x} dx = -2 \operatorname{Cosec} \lambda \cdot \sum_{n=0}^{\infty} \frac{\sin \{(2n+1)\lambda\}}{(2n+1)^2} \text{ (IV, 327).}$$

$$2) \int \frac{x \sin 2x}{1+q \sin^2 x} dx = \frac{\pi}{q} \log \frac{2\sqrt{1+q}}{1+\sqrt{1+q}} \text{ (VIII, 589).}$$

$$3) \int \frac{x^2}{1-\cos x} dx = \pi \log 2 - \frac{1}{4} \pi^2 + 4 \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 204, N. 2.}$$

$$4) \int \frac{x^{p+1}}{1-\cos x} dx = -\left(\frac{\pi}{2}\right)^{p+1} + (p+1) \left(\frac{\pi}{2}\right)^p \left\{ 2 - \sum_{n=1}^{\infty} \frac{4}{p+2n} \sum_{m=1}^{\infty} \frac{1}{(4n^2)^m} \right\} \text{ V. T. 204, N. 6.}$$

$$5) \int \frac{x^a \sin x}{\cos x + \cos \lambda} dx = -\left(\frac{\pi}{2}\right)^a l(2 \cos \lambda) + 2 \cdot 1^{a/1} \cdot \cos \frac{1}{2} a \pi \cdot \sum_1^{\infty} (-1)^{n-1} \frac{\cos n \lambda}{n^{a+1}} + 2 \sum_1^{\infty} (-1)^{n-1} \left\{ \cos \{(2n-1)\lambda\} \cdot \sum_1^{\infty} (-1)^{m-1} \frac{a^{2m-1/1}}{(2n-1)^{2m}} \left(\frac{\pi}{2}\right)^{a+1-2m} + \cos 2n\lambda \cdot \sum_1^{\infty} (-1)^{m-1} \frac{a^{2m/1}}{(2n)^{2m+1}} \left(\frac{\pi}{2}\right)^{a-2m} \right\} \quad (\text{IV, 327}).$$

$$6) \int \frac{x^a \sin x}{\cos x - \cos \lambda} dx = -\left(\frac{\pi}{2}\right)^a l(2 \cos \lambda) - 2 \cdot 1^{a/1} \cdot \cos \frac{1}{2} a \pi \cdot \sum_1^{\infty} \frac{\cos n \lambda}{n^{a+1}} - 2 \sum_1^{\infty} (-1)^{n-1} \left\{ \cos \{(2n-1)\lambda\} \cdot \sum_1^{\infty} (-1)^{m-1} \frac{a^{2m-1/1}}{(2n-1)^{2m}} \left(\frac{\pi}{2}\right)^{a+1-2m} - \cos 2n\lambda \cdot \sum_1^{\infty} (-1)^{m-1} \frac{a^{2m/1}}{(2n)^{2m+1}} \left(\frac{\pi}{2}\right)^{a-2m} \right\} \quad (\text{IV, 327}).$$

$$7) \int \frac{x^a \sin x}{\cos x \pm q} dx = -2 \cos \frac{1}{2} a \pi \cdot 1^{a/1} \sum_1^{\infty} \frac{(\mp c)^n}{n^{a+1}} - 2 \sum_1^{\infty} \left\{ c^{2n} \sum_0^{\infty} \binom{a}{2m} (-1)^m \left(\frac{\pi}{2}\right)^{a-2m} \frac{1}{(2n)^{2m+1}} + c^{2n-1} \sum_0^{\infty} \binom{a}{2m+1} (-1)^m \left(\frac{\pi}{2}\right)^{a-2m-1} \frac{1}{(2n+1)^{2m+2}} \right\} \quad [\text{où } c = q - \sqrt{q^2 - 1}] \quad (\text{IV, 327}).$$

$$8) \int \frac{\cos x - \sin x}{\sin x + \cos x} x dx = \frac{\pi}{4} l 2 - \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad \text{V. T. 250, N. 12.}$$

$$9) \int \frac{\sin x + \cos x}{\cos x - \sin x} x dx = -\frac{\pi}{4} l 2 - \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad \text{V. T. 250, N. 13.}$$

$$10) \int \frac{x \sin 2x}{1+q \cos^2 x} dx = \frac{\pi}{q} l \frac{1+\sqrt{1+q}}{2} \quad (\text{VIII, 589}).$$

$$11) \int \frac{x \operatorname{Tg} x}{p^2 \sin^2 x + q^2 \cos^2 x} dx = \frac{\pi}{2p^2} l \frac{q}{q+p} \quad \text{V. T. 308, N. 17.}$$

$$1) \int \frac{x \cos x}{(1 + \cos \lambda \cdot \sin x)^2} dx = 2 \lambda \operatorname{Cosec} 2 \lambda - \frac{1}{2 \cos \lambda} \frac{\pi}{1 + \cos \lambda} \quad (\text{IV, 329}).$$

$$2) \int \frac{x \cos 2x}{(1 + \sin x \cdot \cos x)^2} dx = \frac{2}{9} \pi \sqrt{3} - \frac{1}{2} \pi \quad (\text{IV, 329}).$$

$$3) \int \frac{x \cos 2x}{(1 - \sin x \cdot \cos x)^2} dx = \frac{1}{2} \pi - \frac{4}{9} \pi \sqrt{3} \quad (\text{IV, 329}).$$

$$4) \int \frac{x \sin 2x}{(1 - \cos^2 \lambda \cdot \sin^2 x)^2} dx = 2 \pi \operatorname{Cosec}^2 2 \lambda \cdot (1 - \sin \lambda) \quad \text{V. T. 208, N. 1.}$$

$$5) \int \frac{x}{(\sin x \pm q \cos x)^2} dx = \pm \frac{\pi}{2} \frac{q}{1+q^2} - \frac{1}{1+q^2} l q \quad \text{V. T. 47, N. 1, 2.}$$

$$6) \int \frac{x \sin x}{(p+q \cos x)^2} dx = \frac{\pi}{2pq} - \frac{1}{q\sqrt{p^2-q^2}} \operatorname{Arccos} \frac{q}{p} [q < p], = \frac{\pi}{2pq} + \frac{1}{q\sqrt{q^2-p^2}} l \frac{p}{q + \sqrt{q^2-p^2}} [q > p] \quad (\text{IV, 329}).$$

$$7) \int \frac{x \cos x}{(s + \sin x)^2} dx = \frac{1}{\sqrt{1-s^2}} l \frac{1 + \sqrt{1-s^2}}{s} - \frac{\pi}{2(s+1)} [s^2 < 1], = \frac{1}{\sqrt{s^2-1}} \operatorname{Arccos} \frac{1}{s} - \frac{\pi}{2(1+s)} [s^2 > 1] \quad (\text{VIII, 589}).$$

$$8) \int \frac{x \sin x}{(p+q \cos x)^2} dx = \frac{\pi}{4p^2q} + \frac{1}{p^2-q^2} \left\{ \frac{1}{2p} - \frac{p}{2q\sqrt{p^2-q^2}} \operatorname{Arccos} \frac{q}{p} \right\} [p^2 > q^2], = \frac{\pi}{4p^2q} - \frac{1}{q^2-p^2} \left\{ \frac{1}{2p} + \frac{p}{2q\sqrt{q^2-p^2}} l \frac{q + \sqrt{q^2-p^2}}{p} \right\} [p^2 < q^2] \quad (\text{VIII, 587}).$$

$$9) \int \frac{x \sin 4x}{(1 - \sin^2 x \cos^2 x)^2} dx = \left(1 - \frac{2}{\sqrt{3}}\right) \pi \quad \text{V. T. 208, N. 2, 3.}$$

$$10) \int \frac{x \sin 2x}{(p^2 \sin^2 x + q^2 \cos^2 x)^2} dx = \frac{\pi}{2p^2q(p+q)} \quad \text{V. T. 47, N. 13.}$$

$$11) \int \frac{x \sin 2x}{(p^2 \sin^2 x + q^2 \cos^2 x)^2} dx = \frac{\pi}{8p^4q^3} \frac{p^3 + pq + 2q^2}{p+q} \quad \text{V. T. 48, N. 13.}$$

$$12) \int \frac{x \sin 2x}{(p^2 \sin^2 x + q^2 \cos^2 x)^2} dx = \frac{\pi}{48p^6q^5} \frac{3p^4 + 3p^2q + 5p^2q^2 + 5pq^3 + 8q^4}{p+q} \quad \text{V. T. 48, N. 17.}$$

$$13) \int \frac{x \sin 2x}{(p^2 \sin^2 x + q^2 \cos^2 x)^2} dx = \frac{\pi}{128p^8q^7} \frac{5p^7 + 5p^5q + 8p^4q^2 + 8p^3q^3 + 11p^2q^4 + 11pq^5 + 16q^6}{p+q} \quad \text{V. T. 48, N. 21.}$$

$$14) \int \frac{\cos^2 \lambda + \sin^2 x}{(\cos^2 \lambda - \sin^2 x)^2} x^2 \cos x dx = -\frac{\pi^2}{4 \sin^2 \lambda} + \frac{4}{\sin \lambda} \sum_{n=0}^{\infty} \frac{\sin \{(2n+1)\lambda\}}{(2n+1)^2} \quad \text{V. T. 207, N. 1.}$$

$$15) \int \frac{x}{(\operatorname{Tg}^p x + \operatorname{Cot}^p x)^2} dx = \frac{\sqrt{\pi^2}}{2^{2q+1}p} \frac{\Gamma(q)}{\Gamma(q+\frac{1}{2})} \quad (\text{VIII, 422}).$$

$$16) \int \frac{x}{\sin x + \cos x} \frac{dx}{\sin x} = \frac{\pi}{4} l 2 + \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad \text{V. T. 250, N. 1.}$$

$$17) \int \frac{x}{\cos x - \sin x} \frac{dx}{\sin x} = \frac{\pi}{4} l 2 - \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad \text{V. T. 250, N. 2.}$$

$$18) \int \frac{x}{p^4 - q^4 \operatorname{Tg}^4 x} \frac{dx}{\sin 2x} = \frac{\pi}{16p^4} l \frac{(p+q)^2(p^2+q^2)}{q^4} \quad \text{V. T. 248, N. 14.}$$

- 19) $\int \frac{\sin x}{p^2 - q^2 \operatorname{Tg}^2 x} \frac{x}{\cos^2 x} dx = \frac{\pi}{8p^2 q^2} \operatorname{I} \frac{p^2 + q^2}{(p+q)^2}$ V. T. 248, N. 13.
- 20) $\int \frac{x}{p^2 \sin^2 x + q^2 \cos^2 x} \frac{dx}{\operatorname{Tg} x} = \frac{\pi}{2q^2} \operatorname{I} \frac{p}{p+q}$ V. T. 308, N. 17.
- 21) $\int \frac{\sin x \cdot \cos x}{1 - \sin^2 \lambda \cdot \cos^2 x} \frac{x}{1 - \sin^2 \mu \cdot \cos^2 x} dx = \frac{\pi}{\cos^2 \lambda - \cos^2 \mu} \operatorname{I} \left(\cos \frac{1}{2} \lambda \cdot \sec \frac{1}{2} \mu \right)$ (IV, 330).
- 22) $\int \frac{x \sin 2x}{1 + p \sin^2 x} \frac{dx}{1 + q \sin^2 x} = \frac{\pi}{p-q} \operatorname{I} \left\{ \frac{1 + \sqrt{1+q}}{1 + \sqrt{1+p}} \cdot \frac{\sqrt{1+p}}{\sqrt{1+q}} \right\}$ V. T. 207, N. 2.
- 23) $\int \frac{x \sin 2x}{1 + p \cos^2 x} \frac{dx}{1 + q \cos^2 x} = \frac{\pi}{p-q} \operatorname{I} \frac{1 + \sqrt{1+p}}{1 + \sqrt{1+q}}$ V. T. 207, N. 10.
- 24) $\int \frac{x \sin 2x}{1 + p \sin^2 x} \frac{dx}{1 + q \cos^2 x} = -\frac{\pi}{p+pq+q} \operatorname{I} \frac{\{1 + \sqrt{1+q}\} \sqrt{1+p}}{1 + \sqrt{1+p}}$ V. T. 207, N. 2, 10.
- 25) $\int \frac{\operatorname{Tg}^2 x}{(p^2 + q^2 \operatorname{Tg}^2 x)^2} \frac{x}{\sin 2x} dx = \frac{\pi}{8pq^2(p+q)}$ (IV, 330*).
- 26) $\int \frac{x}{(\operatorname{Tg} x + \operatorname{Cot} x)^2} \frac{dx}{\operatorname{Tg} 2x \cdot \sin 2x} = -\frac{\pi}{128}$ V. T. 48, N. 4.
- 27) $\int \frac{x}{(\operatorname{Tg}^2 x + \operatorname{Cot}^2 x)^2} \frac{dx}{\sin 2x} = \frac{\sqrt{\pi^2}}{2^{2q+2} p} \frac{\Gamma(q)}{\Gamma(q+\frac{1}{2})}$ (VIII, 422).
- 28) $\int \left[\frac{p^2 x \sin 2px}{\cos p\pi - \cos 2px} - \frac{(1-p^2)x - (1-p)\frac{1}{2}\pi}{\cos p\pi + \cos \{(1-p)2x\}} \sin \{2(1-p)x\} \right] dx = \frac{\pi}{4} \operatorname{I} \{2(1+\cos p\pi)\}$
(IV, 330).
- 29) $\int \frac{x \cos x}{1 + 2p \sin x + p^2} dx = \frac{\pi}{2p} \operatorname{I} (1+p) - \frac{1}{2p} \sum_{n=0}^{\infty} \frac{1}{2n+1} \frac{2^{n/2}}{3^{n/2}} \left(\frac{2p}{1+p^2} \right)^{n+1} [p^2 \leq 1]$ (IV, 328).
- 30) $\int \frac{x \sin x}{(1 \pm 2r \cos x + r^2)^2} dx = \pm \frac{1}{r} \left\{ \frac{\pi}{4(1+r^2)} - \frac{1}{1-r^2} \operatorname{Arctg} \frac{1 \mp r}{1 \pm r} \right\}$ (VIII, 587).

- 1) $\int x \sin x \cdot \cos x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{9p^2} \left[(4-2p^2)E'(p) - (1-p^2)F'(p) - \frac{3}{2}\pi \sqrt{1-p^2} \right].$
- 2) $\int x \sin x \cdot \cos^2 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{225p^2} [15\pi \sqrt{1-p^2} + (1-13p^2)(1-p^2)F'(p) -$
 $-(31-81p^2+26p^4)E'(p)].$

- 3) $\int x \sin x \cdot \cos^1 x dx \sqrt{1-p^1 \sin^2 x} = \frac{1}{11025 p^6} [-420 \pi \sqrt{1-p^1} + (62-13p^2-409p^4) (1-p^1) F'(p) + 2(389-1343p^2+1723p^4-409p^6) E'(p)].$
- 4) $\int x \sin x \cdot \cos^1 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{99225 p^8} [2520 \pi \sqrt{1-p^2} - (652-1815p^2+774p^4+2629p^6) (1-p^2) F'(p) - (4388-19279p^2+33012p^4-27859p^6+5258p^8) E'(p)].$
- 5) $\int x \sin^2 x \cdot \cos x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{225 p^4} [-15(2+3p^2) \frac{\pi}{2} \sqrt{1-p^2} - (1+12p^2)(1-p^1) F'(p) + (31+19p^2-24p^4) E'(p)].$
- 6) $\int x \sin^2 x \cdot \cos^1 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{11025 p^6} [105(4+3p^2) \pi \sqrt{1-p^2} - 2(31-31p^2+114p^4) (1-p^1) F'(p) - (778-1167p^2-523p^4+456p^6) E'(p)].$
- 7) $\int x \sin^2 x \cdot \cos^1 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{99225 p^8} [-1260(2+p^2) \pi \sqrt{1-p^2} + (652-1257p^2+657p^4-1052p^6) (1-p^2) F'(p) + (4388-12277p^2+8838p^4+3155p^6-2104p^8) E'(p)].$
- 8) $\int x \sin^2 x \cdot \cos x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{11025 p^6} [-105(8+12p^2+15p^4) \frac{\pi}{2} \sqrt{1-p^2} + (62-111p^2-360p^4) (1-p^1) F'(p) + 2(389+176p^2+204p^4-360p^6) E'(p)].$
- 9) $\int x \sin^2 x \cdot \cos^2 x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{99225 p^8} [315(8+8p^2+5p^4) \pi \sqrt{1-p^2} - (652-699p^2+99p^4+1000p^6) (1-p^2) F'(p) - (4388-5275p^2-1665p^4-1552p^6+2000p^8) E'(p)].$
- 10) $\int x \sin^2 x \cdot \cos x dx \sqrt{1-p^2 \sin^2 x} = \frac{1}{99225 p^8} [-315(16+24p^2+30p^4+35p^6) \frac{\pi}{2} \sqrt{1-p^2} + (652-141p^2-900p^4-2240p^6) (1-p^2) F'(p) + (4388+1727p^2+1503p^4+2120p^6-4480p^8) E'(p)].$ Sur 1) à 10) voyez M, D. 16, 28.
- 11) $\int x \sin x \cdot \cos x dx \sqrt{1-p^1 \cos^2 x} = \frac{1}{9 p^1} \left[\frac{3}{2} \pi - (2-p^1) 2 E'(p) + (1-p^1) F'(p) \right] \text{ (VIII, 588).}$
- 12) $\int x \sin x \cdot \cos^2 x dx \sqrt{1-p^1 \cos^2 x} = \frac{1}{225 p^4} [15 \pi + (1+12p^2) (1-p^2) F'(p) - (31+19p^2-24p^4) E'(p)].$

- 13) $\int x \sin x \cdot \cos^5 x dx \sqrt{1-p^2 \cos^2 x} = \frac{1}{11025 p^6} [420 \pi - (62 - 111 p^2 - 360 p^4)(1-p^2) F'(p) -$
 $- 2(389 + 176 p^2 + 204 p^4 - 360 p^6) E'(p)].$
- 14) $\int x \sin x \cdot \cos^7 x dx \sqrt{1-p^2 \cos^2 x} = \frac{1}{99225 p^8} [280 \pi - (652 - 141 p^2 - 900 p^4 - 2240 p^6)$
 $(1-p^2) F'(p) - (4388 + 1727 p^2 + 1503 p^4 + 2120 p^6 - 4480 p^8) E'(p)].$
- 15) $\int x \sin^3 x \cdot \cos x dx \sqrt{1-p^2 \cos^2 x} = \frac{1}{225 p^4} [-15(2-5 p^2) \frac{\pi}{2} - (1-13 p^2)(1-p^2) F'(p) +$
 $+ (31 - 81 p^2 + 26 p^4) E'(p)].$
- 16) $\int x \sin^3 x \cdot \cos^3 x dx \sqrt{1-p^2 \cos^2 x} = \frac{1}{11025 p^6} [-105(4-7 p^2) \pi + 2(31 - 31 p^2 + 114 p^4)$
 $(1-p^2) F'(p) + (778 - 1167 p^2 - 523 p^4 + 456 p^6) E'(p)].$
- 17) $\int x \sin^3 x \cdot \cos^5 x dx \sqrt{1-p^2 \cos^2 x} = \frac{1}{99225 p^8} [-1260(2-3 p^2) \pi + (652 - 699 p^2 +$
 $+ 99 p^4 + 1000 p^6)(1-p^2) F'(p) + (4388 - 5275 p^2 - 1665 p^4 + 1552 p^6 + 2000 p^8) E'(p)].$
- 18) $\int x \sin^5 x \cdot \cos x dx \sqrt{1-p^2 \cos^2 x} = \frac{1}{11025 p^6} [105(8-28 p^2 + 35 p^4) \frac{\pi}{2} - (62 - 13 p^2 - 409 p^4)$
 $(1-p^2) F'(p) - 2(389 - 1343 p^2 + 1723 p^4 - 409 p^6) E'(p)].$
- 19) $\int x \sin^5 x \cdot \cos^3 x dx \sqrt{1-p^2 \cos^2 x} = \frac{1}{99225 p^8} [315(8-24 p^2 + 21 p^4) \pi - (652 - 1257 p^2 +$
 $+ 657 p^4 - 1052 p^6)(1-p^2) F'(p) - (4388 - 12277 p^2 + 8838 p^4 + 3155 p^6 - 2104 p^8) E'(p)].$
- 20) $\int x \sin^7 x \cdot \cos x dx \sqrt{1-p^2 \cos^2 x} = \frac{1}{99225 p^8} [-315(16-72 p^2 + 126 p^4 - 105 p^6) \frac{\pi}{2} +$
 $+ (652 - 1815 p^2 + 774 p^4 + 2629 p^6)(1-p^2) F'(p) + (4388 - 19279 p^2 + 33012 p^4 -$
 $- 27859 p^6 + 5258 p^8) E'(p)].$ Sur 12) à 20) voyez M, D. 16, 28.
- 21) $\int x \operatorname{Tg} x dx \sqrt{\cos x} = \sqrt[2]{27} \cdot \left[(1 - \sqrt{3}) F' \left(\cos \frac{\pi}{12} \right) + 2 \sqrt{3} \cdot E' \left(\cos \frac{\pi}{12} \right) \right]$ V. T. 54, N. 11*.

- 1) $\int \frac{x dx}{\operatorname{Tg} x} \sqrt{\sin x} = \frac{3}{2} \pi + \sqrt[2]{27} \cdot \left\{ (\sqrt{3} - 1) F' \left(\cos \frac{\pi}{12} \right) - 2 \sqrt{3} \cdot E' \left(\cos \frac{\pi}{12} \right) \right\}$ V. T. 54, N. 11.
- 2) $\int \frac{\sqrt{\operatorname{Tg} x} - \sqrt{\operatorname{Cot} x}}{\sin 2x} x dx = -\infty$ (IV, 330).

F. Alg. rat. ent.;

Circ. Dir. sous forme irrat. à dén. mon. TABLE 210, suite.

Lim. 0 et $\frac{\pi}{2}$.

$$3) \int \frac{x \cos x}{\sqrt{\sin^3 x}} dx = -\pi + 2\sqrt{2} \cdot F'\left(\sin \frac{\pi}{4}\right) \text{ V. T. 55, N. 1.}$$

$$4) \int \frac{x \sin x}{\sqrt{\cos^3 x}} dx = \infty \text{ V. T. 55, N. 1.}$$

$$5) \int \frac{x \cos x}{\sqrt{\sin x}} dx = \frac{3}{4}\pi + \frac{3}{2} \cdot 3 \cdot \left\{ \frac{3+\sqrt{3}}{2} F'\left(\sin \frac{\pi}{12}\right) - 3E'\left(\sin \frac{\pi}{12}\right) \right\} \text{ V. T. 54, N. 12.}$$

$$6) \int \frac{x \sin x}{\sqrt{\cos x}} dx = \frac{3}{2} \cdot 3 \cdot \left\{ 3E'\left(\sin \frac{\pi}{12}\right) - \frac{3+\sqrt{3}}{2} F'\left(\sin \frac{\pi}{12}\right) \right\} \text{ V. T. 54, N. 12.}$$

$$7) \int \frac{x \operatorname{Tg} x}{\sqrt{\cos x}} dx = \infty \text{ V. T. 55, N. 5.}$$

$$8) \int \frac{x \operatorname{Tg} x}{\sqrt{\cos^3 x}} dx = \infty \text{ V. T. 55, N. 6.}$$

$$9) \int \frac{x}{\operatorname{Tg} x \cdot \sqrt{\sin x}} dx = 27 \cdot F'\left(\cos \frac{\pi}{12}\right) - \frac{3}{2}\pi \text{ V. T. 55, N. 5.}$$

$$10) \int \frac{x}{\operatorname{Tg} x \cdot \sqrt{\sin^3 x}} dx = \frac{3}{2} \cdot 27 \cdot F'\left(\sin \frac{\pi}{12}\right) - \frac{3}{4}\pi \text{ V. T. 55, N. 6.}$$

F. Alg. rat. ent.;

Circ. Dir. à dén. $\sqrt{1-p^2 \sin^2 x}$, $\sqrt{1-p^2 \sin^2 x}$, $[p^2 < 1]$. TABLE 211.

Lim. 0 et $\frac{\pi}{2}$.

$$1) \int \frac{x \sin x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{2p^2} [-\pi \sqrt{1-p^2} + 2E'(p)].$$

$$2) \int \frac{x \sin x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{9p^4} [(7p^2-5)E'(p) - (1-p^2)F'(p) + 3\pi \sqrt{1-p^2}].$$

$$3) \int \frac{x \sin x \cdot \cos^5 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{225p^6} [-60\pi \sqrt{1-p^2} + 2(13-19p^2)(1-p^2)F'(p) + (94-219p^2+149p^4)E'(p)].$$

$$4) \int \frac{x \sin x \cdot \cos^7 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{3675p^8} [840\pi \sqrt{1-p^2} - (404-1041p^2+757p^4)(1-p^2)F'(p) - (1276-4217p^2+4862p^4-2161p^6)E'(p)].$$

$$5) \int \frac{x \sin^3 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{9p^4} \left[-3(2+p^2) \frac{\pi}{2} \sqrt{1-p^2} + (1-p^2)F'(p) + (5+2p^2)E'(p) \right].$$

$$6) \int \frac{x \sin^3 x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{225p^6} [15(4+p^2)\pi \sqrt{1-p^2} - 13(2-p^2)(1-p^2)F'(p) - 2(47-47p^2-13p^4)E'(p)].$$

$$7) \int \frac{x \sin^3 x \cdot \cos^5 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{11025 p^6} [-420(6+p^2)\pi \sqrt{1-p^2} + (1212 - 1849p^2 + 409p^4) \\ (1-p^2)F'(p) + (3828 - 8045p^2 + 3855p^4 + 818p^6)E'(p)].$$

$$8) \int \frac{x \sin^5 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{225 p^6} \left[-15(8+4p^2+3p^4) \frac{\pi}{2} \sqrt{1-p^2} + 2(13+6p^2)(1-p^2)F'(p) + \right. \\ \left. + (94 + 31p^2 + 24p^4)E'(p) \right].$$

$$9) \int \frac{x \sin^5 x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{11025 p^8} [105(24+8p^2+3p^4)\pi \sqrt{1-p^2} - (1212 - 575p^2 - 228p^4) \\ (1-p^2)F'(p) - (3828 - 3439p^2 - 751p^4 - 456p^6)E'(p)].$$

$$10) \int \frac{x \sin^7 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{3675 p^8} \left[-105(16+8p^2+6p^4+5p^6) \frac{\pi}{2} \sqrt{1-p^2} + (404 + 233p^2 + \right. \\ \left. + 120p^4)(1-p^2)F'(p) + (1276 + 389p^2 + 256p^4 + 240p^6)E'(p) \right]$$

Sur 1) à 10) voyez M, D. 16, 28.

$$11) \int \frac{x \sin 2x}{\sqrt{1-p^2 \sin^2 x}} dx = -\frac{\pi}{p^2} \sqrt{1-p^2} + \frac{2}{p^2} E'(p) \text{ V. T. 53, N. 1.}$$

$$12) \int \frac{x \sin 4x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{4}{9 p^4} \left[5(p^2-2)E'(p) - (1-p^2)2F'(p) + 3(4-p^2) \frac{\pi}{2} \sqrt{1-p^2} \right]$$

V. T. 53, N. 4 et T. 209, N. 1.

$$13) \int \frac{x \sin x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{p(1-p^2)} \text{Arcsin } p.$$

$$14) \int \frac{x \sin x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{2 p^2} \left[\frac{\pi}{\sqrt{1-p^2}} - 2F'(p) \right].$$

$$15) \int \frac{x \sin x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{p^4} [-\pi \sqrt{1-p^2} + (1-p^2)F'(p) + E'(p)].$$

$$16) \int \frac{x \sin x \cdot \cos^5 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{9 p^6} [12\pi \sqrt{1-p^2} - (10-9p^2)(1-p^2)F'(p) - 2(7-8p^2)E'(p)].$$

$$17) \int \frac{x \sin x \cdot \cos^7 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{75 p^8} [-120\pi \sqrt{1-p^2} + (92-171p^2+75p^4)(1-p^2)F'(p) + \\ + (148-323p^2+183p^4)E'(p)].$$

$$18) \int \frac{x \sin^3 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{p^4} \left[\frac{\pi}{2\sqrt{1-p^2}} (2-p^2) - F'(p) - E'(p) \right].$$

$$19) \int \frac{x \sin^3 x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{9 p^6} [-3(4-p^2)\pi \sqrt{1-p^2} + 10(1-p^2)F'(p) + 7(2-p^2)E'(p)].$$

F. Alg. rat. ent.;

Circ. Dir. à dén. $\sqrt{1-p^2 \sin^2 x}$, $\sqrt{1-p^2 \sin^2 x}$; $[p^2 < 1]$; TABLE 211, suite.Lim. 0 et $\frac{\pi}{2}$.

- 20) $\int \frac{x \sin^2 x \cdot \cos^5 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{225 p^5} [60(6-p^2)\pi \sqrt{1-p^2} - (276-263p^2)(1-p^2)F'(p) - (444-619p^2+149p^4)E'(p)].$
- 21) $\int \frac{x \sin^5 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{9 p^5} \left[3(8-4p^2-p^4) \frac{\pi}{2 \sqrt{1-p^2}} - (10-p^2)F'(p) - 2(7+p^2)E'(p) \right].$
- 22) $\int \frac{x \sin^5 x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{225 p^5} [-15(24-8p^2-p^4)\pi \sqrt{1-p^2} + (276-13p^2)(1-p^2)F'(p) + (444-269p^2-26p^4)E'(p)].$
- 23) $\int \frac{x \sin^7 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{75 p^5} \left[15(16-8p^2-2p^4-p^6) \frac{\pi}{2 \sqrt{1-p^2}} - (92-13p^2-4p^4)F'(p) - (148+27p^2+8p^4)E'(p) \right].$ Sur 13) à 23) voyez M, D. 16, 28.
- 24) $\int \frac{x \sin 2x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{p^2} \left[\frac{\pi}{\sqrt{1-p^2}} - 2F'(p) \right]$ V. T. 57, N. 1.
- 25) $\int \frac{x \sin 4x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{2}{p^4} \left[2(2-p^2)F'(p) + 4E'(p) - \frac{\pi}{\sqrt{1-p^2}}(4-3p^2) \right]$
V. T. 57, N. 4 et T. 211, N. 1.
- 26) $\int \frac{x \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{\pi}{2 \sqrt{1-p^2}} + \frac{1}{2p} \log \frac{1-p}{1+p}$ V. T. 57, N. 2.

F. Alg. rat. ent.;

Circ. Dir. à dén. $\sqrt{1-p^2 \sin^2 x}$; $[p^2 < 1]$; TABLE 212.Lim. 0 et $\frac{\pi}{2}$.

- 1) $\int \frac{x \sin x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{3(1-p^2)} \left[\sqrt{1-p^2} + \frac{2}{p} \operatorname{Arcsin} p \right].$
- 2) $\int \frac{x \sin x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{3p^2(1-p^2)} \left[\frac{\pi}{2 \sqrt{1-p^2}} - E'(p) \right].$
- 3) $\int \frac{x \sin x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{3p^2(1-p^2)} \left[-\sqrt{1-p^2} + \frac{1}{p} \operatorname{Arcsin} p \right].$
- 4) $\int \frac{x \sin x \cdot \cos^5 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{3p^4} \left[\frac{\pi}{\sqrt{1-p^2}} + E'(p) - 3F'(p) \right].$
- 5) $\int \frac{x \sin x \cdot \cos^7 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{3p^6} [-4\pi \sqrt{1-p^2} + 6(1-p^2)F'(p) + (2+p^2)E'(p)].$
- 6) $\int \frac{x \sin x \cdot \cos^9 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{9p^8} [24\pi \sqrt{1-p^2} - (28-27p^2)(1-p^2)F'(p) - (20-19p^2-3p^4)E'(p)].$

$$7) \int \frac{x \sin^2 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{3p^2(1-p^2)} \left[-1 + \frac{p^2 \pi}{2\sqrt{1-p^2}} + \frac{1-p^2}{2p} \log \frac{1+p}{1-p} \right].$$

$$8) \int \frac{x \sin^3 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{3p^2(1-p^2)^{3/2}} \left[\sqrt{1-p^2} - \frac{1-3p^2}{p} \operatorname{Arccsin} p \right].$$

$$9) \int \frac{x \sin^3 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{6p^4(1-p^2)} \left[\frac{3p^2-2}{\sqrt{1-p^2}} \pi - 2E'(p) + 6(1-p^2)F'(p) \right].$$

$$10) \int \frac{x \sin^3 x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{3p^6} \left[(4-3p^2) \frac{\pi}{\sqrt{1-p^2}} - 3(2-p^2)F'(p) - 2E'(p) \right].$$

$$11) \int \frac{x \sin^3 x \cdot \cos^5 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{9p^8} \left[-12(2-p^2)\pi\sqrt{1-p^2} + (28-9p^2)(1-p^2)F'(p) + (20-13p^2)E'(p) \right].$$

$$12) \int \frac{x \sin^5 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{3p^6(1-p^2)} \left[-(8-12p^2+3p^4) \frac{\pi}{2\sqrt{1-p^2}} + 6(1-p^2)F'(p) + (2-3p^2)E'(p) \right].$$

$$13) \int \frac{x \sin^5 x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{9p^8} \left[3(8-8p^2+p^4) \frac{\pi}{\sqrt{1-p^2}} - (28-19p^2)F'(p) - (20-7p^2)E'(p) \right].$$

$$14) \int \frac{x \sin^7 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{9p^8(1-p^2)} \left[-3(16-24p^2+6p^4+p^6) \frac{\pi}{2\sqrt{1-p^2}} + (28-p^2)(1-p^2)F'(p) + (20-21p^2-2p^4)E'(p) \right].$$

Sur 1) à 14) voyez M, D. 16, 28.

$$15) \int \frac{x \sin 2x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{2}{3p^2} \frac{1}{1-p^2} \left[\frac{\pi}{2\sqrt{1-p^2}} - E'(p) \right] \text{ V. T. 58, N. 1.}$$

$$16) \int \frac{x \sin 4x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{2}{3p^4} \left[\frac{2-p^2}{1-p^2} 2E'(p) - 12F'(p) + \frac{4-5p^2}{\sqrt{1-p^2}^3} \pi \right]$$

V. T. 58, N. 4 et T. 211, N. 24.

$$17) \int \frac{x \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{3(1-p^2)} \left[(3-2p^2) \frac{\pi}{2\sqrt{1-p^2}} - 1 - \frac{1-p^2}{p} \log \frac{1+p}{1-p} \right].$$

$$18) \int \frac{x \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{6p^2} \left[\frac{2p^2 \pi}{\sqrt{1-p^2}} + 2 - \frac{1+2p^2}{p} \log \frac{1+p}{1-p} \right].$$

Sur 17) et 18) voyez M, D. 16, 28.

- 1) $\int \frac{x \sin x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{15p^2(1-p^2)^2} \left[(4+3p^2-2p^4) \sqrt{1-p^2} - 4 \frac{1-3p^2}{p} \operatorname{Arcsin} p \right].$
- 2) $\int \frac{x \sin x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{15p^2(1-p^2)^2} \left[\frac{3\pi}{2\sqrt{1-p^2}} + (1-p^2)F'(p) - 2(2-p^2)E'(p) \right].$
- 3) $\int \frac{x \sin x \cdot \cos^2 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{15p^4(1-p^2)^2} \left[(1-2p^2) \sqrt{1-p^2} - \frac{1-3p^2}{p} \operatorname{Arcsin} p \right].$
- 4) $\int \frac{x \sin x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{15p^4(1-p^2)} \left[\frac{\pi}{\sqrt{1-p^2}} - (1-p^2)F'(p) - (1+2p^2)E'(p) \right].$
- 5) $\int \frac{x \sin x \cdot \cos^4 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{30p^6(1-p^2)} \left[(3-9p^2-4p^4) \sqrt{1-p^2} - \frac{3}{p} (1-3p^2) \operatorname{Arcsin} p \right].$
- 6) $\int \frac{x \sin x \cdot \cos^5 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{15p^6} \left[\frac{4\pi}{\sqrt{1-p^2}} - (14+p^2)F'(p) + 2(3+p^2)E'(p) \right].$
- 7) $\int \frac{x \sin x \cdot \cos^7 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{15p^8} \left[-24\pi \sqrt{1-p^2} + (44+p^2)(1-p^2)F'(p) + \right. \\ \left. + (4+9p^2+2p^4)E'(p) \right].$
- 8) $\int \frac{x \sin^2 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{15p^2(1-p^2)^2} \left[(5-2p^2) \frac{p^2 \pi}{2\sqrt{1-p^2}} - 2 + \frac{(1-p^2)^2}{p} \operatorname{Arcsin} p \right].$
- 9) $\int \frac{x \sin^2 x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{30p^4(1-p^2)^2} \left[2 \frac{p^4 \pi}{\sqrt{1-p^2}} - 6 + (3+2p^2) \frac{1-p^2}{p} \operatorname{Arcsin} p \right].$
- 10) $\int \frac{x \sin^3 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{15p^4(1-p^2)^2} \left[-(1-8p^2+2p^4) \sqrt{1-p^2} + (1-5p^2) \right. \\ \left. (1-3p^2) \frac{1}{p} \operatorname{Arcsin} p \right].$
- 11) $\int \frac{x \sin^3 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{15p^4(1-p^2)^2} \left[-(2-5p^2) \frac{\pi}{2\sqrt{1-p^2}} + (1-p^2)F'(p) + \right. \\ \left. + (1-3p^2)E'(p) \right].$
- 12) $\int \frac{x \sin^3 x \cdot \cos^2 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{30p^6(1-p^2)^2} \left[-(3-11p^2) \sqrt{1-p^2} + (3-5p^2) \right. \\ \left. (1-3p^2) \frac{1}{p} \operatorname{Arcsin} p \right].$
- 13) $\int \frac{x \sin^3 x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{15p^6(1-p^2)} \left[-(4-5p^2) \frac{\pi}{\sqrt{1-p^2}} + 14(1-p^2)F'(p) - \right. \\ \left. - 3(2-p^2)E'(p) \right].$

$$14) \int \frac{x \sin^3 x \cdot \cos^5 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{15p^3} \left[(6-5p^2) \frac{4\pi}{\sqrt{1-p^2}} - (44-29p^2)F'(p) - (4+3p^2)E'(p) \right].$$

$$15) \int \frac{x \sin^4 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{30p^4(1-p^2)^2} \left[3 \frac{p^4 \pi}{\sqrt{1-p^2}} + 2(3-5p^2) - 3 \frac{(1-p^2)^2}{p} \int \frac{1+p}{1-p} \right].$$

$$16) \int \frac{x \sin^5 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{30p^5(1-p^2)^2} \left[(3-19p^2+41p^4-15p^6) \sqrt{1-p^2} + (3-10p^2+15p^4)(1-3p^2) \frac{1}{p} \operatorname{Arcsin} p \right].$$

$$17) \int \frac{x \sin^5 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{15p^5(1-p^2)^2} \left[(8-20p^2+15p^4) \frac{\pi}{2\sqrt{1-p^2}} - (14-15p^2)(1-p^2)F'(p) + 2(3-4p^2)E'(p) \right].$$

$$18) \int \frac{x \sin^5 x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{15p^5(1-p^2)} \left[-(24-40p^2+15p^4) \frac{\pi}{\sqrt{1-p^2}} + (44-15p^2)(1-p^2)F'(p) + (4-7p^2)E'(p) \right].$$

$$19) \int \frac{x \sin^7 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{15p^7(1-p^2)^2} \left[3(16-40p^2+30p^4-5p^6) \frac{\pi}{2\sqrt{1-p^2}} - (44-45p^2)(1-p^2)F'(p) - (4-17p^2+15p^4)E'(p) \right].$$

$$20) \int \frac{x \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{15(1-p^2)^2} \left[(15-20p^2+8p^4) \frac{\pi}{2\sqrt{1-p^2}} - (7-5p^2) - 4 \frac{(1-p^2)^2}{p} \int \frac{1+p}{1-p} \right].$$

$$21) \int \frac{x \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{15p^3(1-p^2)} \left[(5-4p^2) \frac{p^3 \pi}{\sqrt{1-p^2}} + (2-5p^2) - (1+4p^2) \frac{1-p^2}{p} \int \frac{1+p}{1-p} \right].$$

$$22) \int \frac{x \cos^5 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{30p^5} \left[\frac{8p^5 \pi}{\sqrt{1-p^2}} + 2(3+5p^2) - (3+4p^2+8p^4) \frac{1}{p} \int \frac{1+p}{1-p} \right].$$

Sur 1) à 22) voyez M, D. 16, 28.

- 1) $\int \frac{x \sin x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{2p^2} \{ \pi - 2E'(p) \}$ (VIII, 588).
 - 2) $\int \frac{x \sin x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{9p^4} [3\pi - (1-p^2)F'(p) - (5+2p^2)E'(p)].$
 - 3) $\int \frac{x \sin x \cdot \cos^5 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{225p^6} [60\pi - 2(13+6p^2)(1-p^2)F'(p) - (94+31p^2+24p^4)E'(p)].$
 - 4) $\int \frac{x \sin x \cdot \cos^7 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{3675p^8} [840\pi - (414+233p^2+120p^4)(1-p^2)F'(p) - (1276+389p^2+256p^4+240p^6)E'(p)].$
 - 5) $\int \frac{x \sin^3 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{9p^4} \left[(3p^2-2)\frac{3\pi}{2} + (1-p^2)F'(p) + (5-7p^2)E'(p) \right].$
 - 6) $\int \frac{x \sin^3 x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{225p^6} [-15(4-5p^2)\pi + 13(2-p^2)(1-p^2)F'(p) + 2(47-47p^2-13p^4)E'(p)].$
 - 7) $\int \frac{x \sin^3 x \cdot \cos^5 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{11025p^8} [-420(6-7p^2)\pi + (1212-575p^2-238p^4)(1-p^2)F'(p) + (3828-3439p^2-751p^4-456p^6)E'(p)].$
 - 8) $\int \frac{x \sin^5 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{225p^6} \left[15(8-20p^2+15p^4)\frac{\pi}{2} - 2(13-19p^2)(1-p^2)F'(p) - (94-219p^2+149p^4)E'(p) \right].$
 - 9) $\int \frac{x \sin^5 x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{11025p^8} [105(24-56p^2+35p^4)\pi - (1212-1849p^2+409p^4)(1-p^2)F'(p) - (3828-8045p^2+3855p^4+818p^6)E'(p)].$
 - 10) $\int \frac{x \sin^7 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{3675p^8} \left[-105(16-56p^2+70p^4-35p^6)\frac{\pi}{2} + (404-1041p^2+757p^4)(1-p^2)F'(p) + (1276-4217p^2+4862p^4-2161p^6)E'(p) \right].$
- Sur 2) à 10) voyez M, D. 16, 28.
- 11) $\int \frac{x \sin 2x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{\pi}{p^2} - \frac{2}{p^2} E'(p)$ (VIII, 588).
 - 12) $\int \frac{x \sin 4x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{4}{9p^4} \left[(4-3p^2)\frac{3\pi}{2} + (p^2-2)5E'(p) - 2(1-p^2)F'(p) \right]$

$$13) \int \frac{x \sin x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{2p} \log \frac{1+p}{1-p} \quad (\text{M, D. 16, 28}).$$

$$14) \int \frac{x \sin x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{p^2} \left[F'(p) - \frac{\pi}{2} \right] \quad (\text{VIII, 588}).$$

$$15) \int \frac{x \sin x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{p^4} [F'(p) + E'(p) - \pi].$$

$$16) \int \frac{x \sin x \cdot \cos^5 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{9p^6} [-12\pi - (10-p^2)F'(p) + 2(7+p^2)E'(p)].$$

$$17) \int \frac{x \sin x \cdot \cos^7 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{75p^8} [-120\pi + (92-13p^2-4p^4)F'(p) + (148+27p^2+8p^4)E'(p)].$$

$$18) \int \frac{x \sin^3 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{p^4} \left[(2-p^2)\frac{\pi}{2} - (1-p^2)F'(p) - E'(p) \right].$$

$$19) \int \frac{x \sin^3 x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{9p^6} [3(4-3p^2)\pi - 10(1-p^2)F'(p) - 7(2-p^2)E'(p)].$$

$$20) \int \frac{x \sin^3 x \cdot \cos^5 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{225p^8} [60(6-5p^2)\pi - (276-13p^2)(1-p^2)F'(p) + \\ + (444-269p^2-26p^4)E'(p)].$$

$$21) \int \frac{x \sin^5 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{9p^6} \left[-3(8-12p^2+3p^4)\frac{\pi}{2} + (10-9p^2)(1-p^2)F'(p) + \right. \\ \left. + 2(7-8p^2)E'(p) \right].$$

$$22) \int \frac{x \sin^5 x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{225p^8} [-15(24-40p^2+15p^4)\pi + (276-263p^2)(1-p^2)F'(p) + \\ + (444-619p^2+149p^4)E'(p)].$$

$$23) \int \frac{x \sin^7 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{75p^8} [15(16-40p^2+30p^4-5p^6)\frac{\pi}{2} - (92-171p^2+75p^4) \\ (1-p^2)F'(p) - (148-323p^2+183p^4)E'(p)]. \text{ Sur 14) à 23) voyez M, D. 16, 28.}$$

$$24) \int \frac{x \sin 2x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{p^2} [2F'(p) - \pi] \quad (\text{VIII, 588}).$$

$$25) \int \frac{x \sin 4x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{2}{p^4} [(2-p^2)2F'(p) + 4E'(p) - (4-p^2)\pi] \quad \text{V. T. 57, N. 4 et T. 214, N. 11.}$$

$$26) \int \frac{x \cos x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{1-p^2} \left[\frac{\pi}{2} - \frac{1}{p} \text{Arcsin } p \right] \quad (\text{M, D. 16, 28}).$$

- 1) $\int \frac{x \sin x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{3} \left[\frac{1}{1-p^2} + \frac{1}{p} \log \frac{1+p}{1-p} \right] \text{ (M, D. 16, 28).}$
- 2) $\int \frac{x \sin x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{3p^2(1-p^2)} \left[E'(p) - (1-p^2) \frac{\pi}{2} \right] \text{ (VIII, 588).}$
- 3) $\int \frac{x \sin x \cdot \cos^2 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{6p^2} \left[\frac{2}{1-p^2} - \frac{1}{p} \log \frac{1+p}{1-p} \right].$
- 4) $\int \frac{x \sin x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{3p^4(1-p^2)} [(1-p^2)\pi - 3(1-p^2)F'(p) + E'(p)].$
- 5) $\int \frac{x \sin x \cdot \cos^5 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{3p^6(1-p^2)} [4(1-p^2)\pi - 6(1-p^2)F'(p) - (2-3p^2)E'(p)].$
- 6) $\int \frac{x \sin x \cdot \cos^7 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{9p^8(1-p^2)} [24(1-p^2)\pi - (28-p^2)(1-p^2)F'(p) - (20-21p^2-2p^4)E'(p)].$
- 7) $\int \frac{x \sin^3 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{3p^2(1-p^2)} \left[\frac{1}{2}p^2\pi + \sqrt{1-p^2} - \frac{1}{p} \text{Arcsin } p \right].$
- 8) $\int \frac{x \sin^3 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{6p^2} \left[-2 + (1+2p^2) \frac{1}{p} \log \frac{1+p}{1-p} \right],$
- 9) $\int \frac{x \sin^3 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{3p^4} \left[-(2+p^2) \frac{1}{2}\pi + 3F'(p) - E'(p) \right].$
- 10) $\int \frac{x \sin^3 x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{3p^6} [-(4-p^2)\pi + 3(2-p^2)F'(p) + 2E'(p)].$
- 11) $\int \frac{x \sin^3 x \cdot \cos^5 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{9p^8} [-12(2-p^2)\pi + (28-19p^2)F'(p) + (20-7p^2)E'(p)].$
- 12) $\int \frac{x \sin^5 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{3p^6} \left[(8-4p^2-p^4) \frac{\pi}{2} - 6(1-p^2)F'(p) - (2+p^2)E'(p) \right].$
- 13) $\int \frac{x \sin^5 x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{9p^8} [3(8-8p^2+p^4)\pi - (28-9p^2)(1-p^2)F'(p) - (20-13p^4)E'(p)].$
- 14) $\int \frac{x \sin^7 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{9p^8} \left[-3(16-24p^2+6p^4+p^6) \frac{\pi}{2} + (28-27p^2)(1-p^2)F'(p) + (20-19p^2-3p^4)E'(p) \right]. \text{ Sur 3) à 14) voyez M, D. 16, 28.}$
- 15) $\int \frac{x \sin 2x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{3p^2} \left[\frac{2}{1-p^2} E'(p) - \pi \right] \text{ (VIII, 588).}$

F. Alg. rat. ent.; $\frac{[p^2 < 1]}{\sqrt{1-p^2 \cos^2 x}}$; TABLE 215, suite.

Lim. 0 et $\frac{\pi}{2}$.

$$16) \int \frac{x \sin 4x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{2}{3p^4} \left[(4-p^2)\pi - 12F(p) + \frac{2-p^2}{1-p^2} 2E(p) \right]$$

V. T. 58, N. 4 et T. 214, N. 24.

$$17) \int \frac{x \cos x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{3(1-p^2)^2} \left[(3-p^2)\frac{\pi}{2} - \sqrt{1-p^2} - \frac{2}{p} \operatorname{Arcsin} p \right].$$

$$18) \int \frac{x \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{3p^2(1-p^2)^2} \left[p^2\pi - \sqrt{1-p^2} + \frac{1-3p^2}{p} \operatorname{Arcsin} p \right].$$

Sur 17) et 18) voyez M, D. 16, 28.

F. Alg. rat. ent.; $\frac{[p^2 < 1]}{\sqrt{1-p^2 \cos^2 x}}$; TABLE 216.

Lim. 0 et $\frac{\pi}{2}$.

$$1) \int \frac{x \sin x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{15} \left[\frac{7-5p^2}{(1-p^2)^2} + \frac{4}{p} \operatorname{Arctan} \frac{1+p}{1-p} \right].$$

$$2) \int \frac{x \sin x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{15p^2(1-p^2)^2} \left[3(1-p^2)^2 \frac{\pi}{2} - (1-p^2)F(p) + 2(2-p^2)E(p) \right].$$

$$3) \int \frac{x \sin x \cdot \cos^2 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{15p^2} \left[\frac{2}{(1-p^2)^2} - \frac{1}{p} \operatorname{Arctan} \frac{1+p}{1-p} \right].$$

$$4) \int \frac{x \sin x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{15p^4(1-p^2)^2} [(1-p^2)^2\pi - (1-p^2)F(p) - (1-3p^2)E(p)].$$

$$5) \int \frac{x \sin x \cdot \cos^4 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{30p^4} \left[-2 \frac{3-5p^2}{(1-p^2)^2} + \frac{3}{p} \operatorname{Arctan} \frac{1+p}{1-p} \right].$$

$$6) \int \frac{x \sin x \cdot \cos^5 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{15p^6(1-p^2)^2} [-4(1-p^2)^2\pi + (14-15p^2)(1-p^2)F(p) - 2(3-4p^2)E(p)].$$

$$7) \int \frac{x \sin x \cdot \cos^7 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{15p^8(1-p^2)^2} [-24(1-p^2)^2\pi + (44-45p^2)(1-p^2)F(p) + (4-17p^2+15p^4)E(p)].$$

$$8) \int \frac{x \sin^2 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{15p^4(1-p^2)^2} \left[-p^2(2-6p^2+3p^4)\frac{\pi}{2} - (1-2p^2)\sqrt{1-p^2} + \frac{1-3p^2}{p} \operatorname{Arcsin} p \right].$$

$$9) \int \frac{x \sin^2 x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{30p^6(1-p^2)^2} \left[p^2(21-58p^2+54p^4-15p^6)\frac{\pi}{2} + (3-11p^2)\sqrt{1-p^2} - (3-5p^2)(1-3p^2)\frac{1}{p} \operatorname{Arcsin} p \right].$$

- $$10) \int \frac{x \sin^2 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{15p^2} \left[-\frac{2-5p^2}{1-p^2} + \frac{1+4p^2}{p} \log \frac{1+p}{1-p} \right].$$
- $$11) \int \frac{x \sin^2 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{15p^4(1-p^2)} \left[-(2+3p^2)(1-p^2) \frac{\pi}{2} + (1-p^2)F'(p) + (1+2p^2)E'(p) \right].$$
- $$12) \int \frac{x \sin^2 x \cdot \cos^2 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{30p^4} \left[\frac{6}{1-p^2} - \frac{3+2p^2}{p} \log \frac{1+p}{1-p} \right].$$
- $$13) \int \frac{x \sin^2 x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{15p^6(1-p^2)} [(4+p^2)(1-p^2)\pi - 14(1-p^2)F'(p) + 3(2-p^2)E'(p)].$$
- $$14) \int \frac{x \sin^2 x \cdot \cos^4 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{15p^8(1-p^2)} [4(6-p^2)(1-p^2)\pi - (44-15p^2)(1-p^2)F'(p) - (4-3p^2)E'(p)].$$
- $$15) \int \frac{x \sin^2 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{30p^6(1-p^2)} \left[-3p^2(7-11p^2+3p^4) \frac{\pi}{2} - (3-9p^2-4p^4) \sqrt{1-p^2} + \frac{3}{p}(1-3p^2) \operatorname{Arcsin} p \right].$$
- $$16) \int \frac{x \sin^5 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{30p^4} \left[-2(3+5p^2) + \frac{3+4p^2+8p^4}{p} \log \frac{1+p}{1-p} \right].$$
- $$17) \int \frac{x \sin^5 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{15p^6} \left[-(8+4p^2+3p^4) \frac{\pi}{2} + (14+p^2)F'(p) - 2(3+p^2)E'(p) \right].$$
- $$18) \int \frac{x \sin^5 x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{15p^8} [-(24-8p^2-p^4)\pi + (44-29p^2)F'(p) + (4-3p^2)E'(p)].$$
- $$19) \int \frac{x \sin^7 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{15p^8} \left[3(16-3p^2-2p^4-p^6) \frac{\pi}{2} - (44+p^2)(1-p^2)F'(p) - (4+9p^2+2p^4)E'(p) \right].$$
- $$20) \int \frac{x \cos x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{15p^3(1-p^2)^3} \left[p^2(7-6p^2+3p^4) \frac{\pi}{2} - (4+3p^2-2p^4) \sqrt{1-p^2} + \frac{1-3p^2}{p} 4 \operatorname{Arcsin} p \right].$$
- $$21) \int \frac{x \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{15p^4(1-p^2)^3} \left[p^2(2-p^2+3p^4) \frac{\pi}{2} + (1-8p^2+2p^4) \sqrt{1-p^2} - (1-5p^2)(1-3p^2) \frac{1}{p} \operatorname{Arcsin} p \right].$$
- $$22) \int \frac{x \cos^5 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{1}{30p^6(1-p^2)^3} \left[-p^2(21-83p^2+114p^4-83p^6+15p^8) - (3-19p^2+41p^4-15p^6) \sqrt{1-p^2} + (3-10p^2+15p^4)(1-3p^2) \frac{1}{p} \operatorname{Arcsin} p \right].$$

Sur 1) à 22) voyez M, D. 16, 28.

- 1) $\int \frac{x \sin x}{\sqrt{q+p \cos x}} dx = \frac{1}{p} \left[\frac{\pi}{\sqrt{q}} - \frac{4}{\sqrt{p+q}} F\left(\frac{\pi}{4}, \sqrt{\frac{2p}{p+q}}\right) \right]$ V. T. 56, N. 5.
- 2) $\int \frac{x \sin x}{\sqrt{q-p \cos x}} dx = \frac{1}{p} \left[\frac{-\pi}{\sqrt{q}} + \frac{4}{\sqrt{p+q}} \left\{ F'\left(\sqrt{\frac{2p}{p+q}}\right) - F\left(\frac{\pi}{4}, \sqrt{\frac{2p}{p+q}}\right) \right\} \right]$ V. T. 56, N. 6.
- 3) $\int \frac{x \sin 2x}{\sqrt{q+p \cos x}} dx = \frac{4}{p^2} \left[-\pi \sqrt{q} + \frac{2}{\sqrt{p+q}} \left\{ (p+q) E\left(\frac{\pi}{4}, \sqrt{\frac{2p}{p+q}}\right) + q F\left(\frac{\pi}{4}, \sqrt{\frac{2p}{p+q}}\right) \right\} \right]$
V. T. 56, N. 7 et T. 217, N. 1.
- 4) $\int \frac{x \sin 2x}{\sqrt{q-p \cos x}} dx = \frac{4}{p^2} \left[-\pi \sqrt{q} + \frac{2q}{\sqrt{p+q}} \left\{ F'\left(\sqrt{\frac{2p}{p+q}}\right) - F\left(\frac{\pi}{4}, \sqrt{\frac{2p}{p+q}}\right) \right\} + \right.$
 $\left. + 2\sqrt{p+q} \cdot \left\{ E'\left(\sqrt{\frac{2p}{p+q}}\right) - E\left(\frac{\pi}{4}, \sqrt{\frac{2p}{p+q}}\right) \right\} \right]$ V. T. 56, N. 8 et T. 217, N. 2.
- 5) $\int \frac{x \sin x}{\sqrt{1+p^2 \cos^2 x}} dx = \frac{1}{p} \operatorname{Arctg} p$ V. T. 60, N. 5.
- 6) $\int \frac{x \cos x}{\sqrt{1+p^2 \sin^2 x}} dx = \frac{\pi}{2\sqrt{1+p^2}} - \frac{1}{p} \operatorname{Arctg} p$ V. T. 60, N. 5.
- 7) $\int \frac{x \sin 2x}{\sqrt{1+\sin^2 x}} dx = \frac{-\pi}{\sqrt{2}} + \sqrt{2} \cdot F'\left(\sin \frac{\pi}{4}\right)$ V. T. 60, N. 1.
- 8) $\int \frac{x \sin 2x}{\sqrt{1+\cos^2 x}} dx = \pi - \sqrt{2} \cdot F'\left(\sin \frac{\pi}{4}\right)$ (VIII, 588).
- 9) $\int \frac{1-x \cot x}{\sqrt{1-\cos^2 \lambda} \cdot \cos^2 x} \frac{dx}{\sin x} = \frac{1}{2} \frac{\pi}{1+\cos \lambda} + \frac{\lambda \cot \lambda - 1}{\sin \lambda}$ (IV, 332).
- 10) $\int \frac{\cot x + \frac{2}{p^2} \sin 2x}{\sqrt{1-p^2 \sin^2 x}} \frac{x dx}{\sqrt{\sin x}} = \left[-\pi \sqrt{1+p^2} + 4 \frac{a F'(a) + b F'(b)}{(a+b)^2} + 4 \frac{b-a}{(a+b)^2} \{E'(b) - E'(a)\} \right]$
 $\left[\text{où } 2a^2 = \frac{(1-\sqrt{p})^2}{1+p}, 2b^2 = \frac{(1+\sqrt{p})^2}{1+p} \right]$ V. T. 55, N. 4.
- 11) $\int \frac{x}{\sin x + \cos x} \frac{dx}{\sqrt{\sin 2x}} = \frac{1}{8} \pi^2 \sqrt{2}$ V. T. 251, N. 2.
- 12) $\int \frac{x}{\sqrt{\sin^2 x + \sqrt{\cos^2 x}} \sqrt{\sin^2 x \cdot \cos^2 x}} dx = \frac{3}{8} \pi^2$ V. T. 251, N. 8.

- 1) $\int x \sin ax dx = \frac{\pi}{a} \cos \{(a+1)\pi\}$ (VIII, 214).
- 2) $\int x \cos ax dx = \frac{1}{a^2} (\cos a\pi - 1)$ (VIII, 215).

- 3) $\int x \sin \left\{ \left(a - \frac{1}{2} \right) x \right\} dx = \frac{4}{(2a-1)^2} \sin \left(\frac{2a-1}{2} \pi \right)$ (IV, 333).
- 4) $\int x \operatorname{Tang} x dx = -\pi \log 2$ V. T. 306, N. 1. 5) $\int x \sin x \cdot \cos ax dx = (-1)^{a+1} \frac{\pi}{a^2-1}$ (IV, 333).
- 6) $\int x \sin ax \cdot \cos x dx = (-1)^a \frac{a\pi}{a^2-1}$ (IV, 333).
- 7) $\int x \sin^q x dx = \frac{\pi^2}{2^{q+1}} \frac{\Gamma(q+1)}{\{\Gamma(\frac{1}{2}q+1)\}^2}$ (IV, 333).
- 8) $\int x \sin^{2a} x dx = \frac{1}{2} \pi^2 \frac{1^{a/2}}{2^{a/2}}$ (VIII, 256). 9) $\int x \sin^{2a+1} x dx = \pi \frac{2^{a/2}}{3^{a/2}}$ (VIII, 256).
- 10) $\int x \cos^{2a} x dx = \frac{1}{2} \pi^2 \frac{1^{a/2}}{2^{a/2}}$ (VIII, 256). 11) $\int x \sin x \cdot \cos^{2a} x dx = \frac{\pi}{2a+1}$ (IV, 333).
- 12) $\int \left(\frac{\pi}{2} - x \right) \operatorname{Tg} x dx = \pi \log 2$ V. T. 250, N. 3.
- 13) $\int x^2 \sin ax dx = \frac{1}{a^3} [(2-a^2\pi^2) \cos a\pi - 2]$ V. T. 218, N. 2.
- 14) $\int x^2 \cos ax dx = \frac{2\pi}{a^3} \cos a\pi$ V. T. 218, N. 1.
- 15) $\int x \sec x dx = 4 \sum_{n=0}^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2}$ V. T. 248, N. 2.

- 1) $\int \frac{x^2}{1-\cos x} dx = 4\pi \log 2$ V. T. 205, N. 1.
- 2) $\int \frac{x}{p \pm \cos x} dx = \frac{\pi}{2\sqrt{p^2-1}} \pm \frac{4}{\sqrt{p^2-1}} \sum_{n=0}^{\infty} \frac{\{p - \sqrt{p^2-1}\}^{2n+1}}{(2n+1)^2} [p > 1]$ (IV, 334).
- 3) $\int \frac{x}{\cos x \pm \cos \lambda} dx = -4 \operatorname{Cosec} \lambda \cdot \sum_{n=0}^{\infty} \frac{\sin \{(2n+1)\lambda\}}{(2n+1)^2}$ (IV, 334).
- 4) $\int \frac{x \sin x}{p + \cos x} dx = -\pi \log \{2(1-p)\} [p^2 < 1], = \pi \log \frac{p + \sqrt{p^2-1}}{2(p-1)} [p^2 > 1]$ (VIII, 589).
- 5) $\int \frac{x \sin x}{1-p \cos x} dx = \frac{\pi}{p} \log \frac{2(1+p)}{1+\sqrt{1-p^2}} [p^2 < 1], = \frac{\pi}{p} \log \frac{2p}{1+p} [p^2 > 1]$ (VIII, 589).

$$6) \int \frac{x \sin x}{i \pm \cos x} dx = \mp 2\pi l \{1 \mp (1 - \sqrt{2})i\} \text{ (IV, 334).}$$

$$7) \int \frac{x^a \sin x}{\cos x - \cos \lambda} dx = -\pi^a l \{2(1 + \cos \lambda)\} - 2 \cdot 1^{a/1} \cos \frac{1}{2} a \pi \cdot \sum_0^\infty \frac{\cos n \lambda}{n^{a+1}} - 2 \sum_1^\infty \left\{ \frac{\cos n \lambda}{n} (-1)^n \right. \\ \left. \sum_1^\infty (-1)^m a^{2m-1} \pi^{a-2m} \frac{1}{n^{2m}} \right\} \text{ (IV, 335).}$$

$$8) \int \frac{x^a \sin x}{\cos x + \cos \lambda} dx = -\pi^a l \{2(1 - \cos \lambda)\} + 2 \cdot 1^{a/1} \cos \frac{1}{2} a \pi \cdot \sum_0^\infty (-1)^{n-1} \frac{\cos n \lambda}{n^{a+1}} - 2 \sum_1^\infty \left\{ \frac{\cos n \lambda}{n} \sum_1^\infty (-1)^m a^{2m-1} \pi^{a-2m} \frac{1}{n^{2m}} \right\} \text{ (IV, 334).}$$

$$9) \int \frac{x^p \sin x}{\cos x \pm q} dx = 2 \cos \frac{1}{2} p \pi \cdot \Gamma(1+p) \sum_1^\infty \frac{(\mp c)^n}{n^{p+1}} - 2 \pi^p l (1 \mp c) - 2 \sum_1^\infty \frac{(\pm c)^n}{n} \sum_1^\infty \left\{ (-1)^{m-1} p^{2m-1} \right. \\ \left. \pi^{a-2m} \frac{1}{n^{2m}} \right\} \text{ [où } c = q - \sqrt{q^2 - 1}] \text{ (IV, 334).}$$

$$10) \int \frac{x}{p^2 - \cos^2 x} dx = \frac{\pi}{2p \sqrt{p^2 - 1}} [p^2 > 1], = 0 [p^2 < 1] \text{ (VIII, 327).}$$

$$11) \int \frac{x \sin x}{1 + \cos^2 x} dx = \frac{1}{4} \pi^2 \text{ (VIII, 423).}$$

$$12) \int \frac{x \sin x}{1 - \cos^2 \lambda \cdot \sin^2 x} dx = \pi (\pi - 2\lambda) \operatorname{Cosec} 2\lambda \text{ (VIII, 423).}$$

$$13) \int \frac{x \sin x}{p^2 - \cos^2 x} dx = \frac{\pi}{2p} l \frac{1+p}{1-p} [p < 1], = \frac{\pi}{2p} l \frac{p+1}{p-1} [p > 1] \text{ V. T. 219, N. 4.}$$

$$14) \int \frac{x \sin x}{Tg^2 \lambda + \cos^2 x} dx = \frac{1}{2} \pi (\pi - 2\lambda) \operatorname{Cot} \lambda \text{ (VIII, 423*)}. \quad \text{V. T. 219, N. 2.}$$

$$15) \int \frac{x \cos x}{1 + p \sin x} dx = \frac{2\pi}{p} l \frac{2}{1 + \sqrt{1+2p}} \text{ V. T. 308, N. 14.}$$

$$16) \int \frac{x \cos x}{p^2 - \cos^2 x} dx = \frac{-4}{\sqrt{p^2 - 1}} \sum_0^\infty \frac{\{p - \sqrt{p^2 - 1}\}^{2n+1}}{(2n+1)^2} [p^2 > 1] \text{ V. T. 219, N. 2.}$$

$$17) \int \frac{x \cos x}{\cos^2 \lambda - \cos^2 x} dx = \frac{4}{\sin \lambda} \sum_0^\infty \frac{\sin \{(2n+1)\lambda\}}{(2n+1)^2} \text{ V. T. 219, N. 3.}$$

$$18) \int \frac{p \cos x + q}{\cos^2 x + \operatorname{Cot}^2 \lambda} x \sin x dx = 2p\pi l \left(\cos \frac{1}{2} \lambda \right) + \pi q \lambda Tg \lambda \text{ (IV, 334).}$$

$$19) \int \frac{x \sin 2x}{p^2 - \cos^2 x} dx = \pi l \{4(1 - p^2)\} [p^2 < 1], = 2\pi l [2\{1 - p^2 + p\sqrt{p^2 - 1}\}] [p^2 > 1] \\ \text{V. T. 219, N. 4.}$$

- 1) $\int \frac{x \sin x}{(1 + \cos \lambda \cdot \cos x)^2} dx = \pi \sqrt{2} \cdot \operatorname{Cosec} \lambda \cdot \operatorname{Cosec} \frac{1}{2} \lambda : \operatorname{Cosec} \left(\frac{\pi + 2\lambda}{4} \right)$ V. T. 64, N. 12.
- 2) $\int \frac{x \cos x}{(1 + \cos \lambda \cdot \sin x)^2} dx = \frac{4\lambda}{\sin 2\lambda} - \frac{\pi}{\cos \lambda}$ (IV, 336).
- 3) $\int \frac{x \sin x}{(p + q \cos x)^2} dx = \frac{\pi}{q} \left\{ \frac{1}{p-q} - \frac{1}{\sqrt{p^2 - q^2}} \right\} [p^2 > q^2]$ V. T. 64, N. 12.
- 4) $\int \frac{x^2 \sin x}{(p \pm \cos x)^2} dx = \frac{\mp \pi}{\sqrt{p^2 - 1}} - \frac{\pi^2}{1 \mp p} - \frac{8}{\sqrt{p^2 - 1}} \sum_{n=0}^{\infty} \frac{\{p - \sqrt{p^2 - 1}\}^{2n+1}}{(2n+1)^2} [p > 1]$ V. T. 219, N. 2.
- 5) $\int \frac{x^2 \sin x}{(\cos x \pm \cos \lambda)^2} dx = \frac{-\pi^2}{1 \mp \cos \lambda} + \frac{8}{\sin \lambda} \sum_{n=0}^{\infty} \frac{\sin \{(2n+1)\lambda\}}{(2n+1)^2}$ V. T. 219, N. 3.
- 6) $\int \frac{1 \pm p \cos x}{(p \pm \cos x)^2} x^2 dx = 2\pi l \{2(1 \mp p)\} [p^2 < 1], = 4\pi l \{1 \mp p \pm \sqrt{p^2 - 1}\} [p^2 > 1]$
V. T. 219, N. 4.
- 7) $\int \frac{x \sin x}{(p + q \cos x)^2} dx = \frac{\pi}{2q(q-p)^2} [p^2 < q^2], = \frac{\pi}{2q(p-q)^2} \left(1 - p \sqrt{\frac{p-q}{(p+q)^2}} \right) [p^2 > q^2]$
(VIII, 587).
- 8) $\int \frac{x \sin 2x}{(1 - \cos^2 \lambda \cdot \sin^2 x)^2} dx = 2\pi \frac{\sin \lambda - 1}{\cos \lambda \cdot \sin 2\lambda}$ V. T. 220, N. 2.
- 9) $\int \frac{x^2 \sin 2x}{(p^2 - \cos^2 x)^2} dx = \frac{\pi \sqrt{p^2 - 1} - 2p}{p^3 - 1} [p^2 > 1]$ V. T. 219, N. 10.
- 10) $\int \frac{q \cos 2x - \sin^2 x}{(q + \sin^2 x)^2} x^2 dx = -4\pi l \{2\{-q + \sqrt{q(q+1)}\}\}$ V. T. 219, N. 19.
- 11) $\int \frac{q \cos 2x + \sin^2 x}{(q - \sin^2 x)^2} x^2 dx = 2\pi l(1+q)$ V. T. 219, N. 19.
- 12) $\int \frac{p^2 - 1 - \sin^2 x}{(p^2 - \cos^2 x)^2} x^2 \cos x dx = \frac{\pi}{p} l \frac{1-p}{1+p} [p < 1], = \frac{\pi}{p} l \frac{p-1}{p+1} [p > 1]$ V. T. 219, N. 13.
- 13) $\int \frac{x \sin 2x}{(p^2 \sin^2 x + q^2 \cos^2 x)^2} dx = \frac{-\pi}{pq^2(p+q)}$ (VIII, 588*).
- 14) $\int \frac{x \sin 2x}{(p^2 \sin^2 x + q^2 \cos^2 x)^2} dx = \frac{-\pi}{4p^2 q^4} \frac{2p^2 + pq + q^2}{p+q}$ V. T. 48, N. 13.

- 1) $\int \frac{x \sin x}{1 + q + q \cos x} dx = \frac{2\pi}{q} i \frac{1 + \sqrt{1+2q}}{2}$ V. T. 308, N. 15.
- 2) $\int \frac{x \sin x}{1 - 2r \cos x + r^2} dx = \frac{\pi}{r} l(1+r) [r^2 < 1], = \frac{\pi}{r} l \frac{1+r}{r} [r^2 > 1]$ (VIII, 678*).
- 3) $\int \frac{\sin bx}{1 - 2p \cos x + p^2} x^{2a+1} dx = (-1)^{a+1} \frac{\pi p^b}{1-p^2} (lp)^{2a+1}$ (VIII, 575).
- 4) $\int \frac{\sin bx \cdot \sin x}{1 - 2p \cos x + p^2} x^{2a} dx = (-1)^a \frac{\pi}{2} p^{b-1} (lp)^{2a}$ (VIII, 575).
- 5) $\int \frac{\sin bx \cdot \cos x}{1 - 2p \cos x + p^2} x^{2a+1} dx = (-1)^a \frac{\pi}{2} \frac{1+p^2}{1-p^2} p^{b-1} (lp)^{2a+1}$ (VIII, 575).
- 6) $\int \frac{\cos bx}{1 - 2p \cos x + p^2} x^{2a} dx = (-1)^a \frac{\pi p^b}{1-p^2} (lp)^{2a}$ (VIII, 575).
- 7) $\int \frac{\cos bx \cdot \sin x}{1 - 2p \cos x + p^2} x^{2a+1} dx = (-1)^a \frac{\pi}{2} p^{b-1} (lp)^{2a+1}$ (VIII, 575).
- 8) $\int \frac{\cos bx \cdot \cos x}{1 - 2p \cos x + p^2} x^{2a} dx = (-1)^a \frac{\pi}{2} \frac{1+p^2}{1-p^2} p^{b-1} (lp)^{2a}$ (VIII, 575).
- 9) $\int \frac{\sin \{(2b+1)x\}}{1 - 2q \cos 2x + q^2} x^{2a+1} dx = 0$ V. T. 221, N. 3.
- 10) $\int \frac{\sin 2bx \cdot \sin x}{1 - 2q \cos 2x + q^2} x^{2a} dx = 0$ V. T. 221, N. 4.
- 11) $\int \frac{\sin 2bx \cdot \cos x}{1 - 2q \cos 2x + q^2} x^{2a+1} dx = 0$ V. T. 221, N. 3.
- 12) $\int \frac{\sin \{(2b+1)x\} \cdot \sin x}{1 - 2q \cos 2x + q^2} x^{2a} dx = (-1)^a \frac{\pi}{2^{2a+1}} \frac{q^b}{1+q} (lq)^{2a}$ V. T. 221, N. 4.
- 13) $\int \frac{\sin \{(2b+1)x\} \cdot \cos x}{1 - 2q \cos 2x + q^2} x^{2a+1} dx = (-1)^{a+1} \frac{\pi}{2^{2a+1}} \frac{q^b}{1-q} (lq)^{2a+1}$ V. T. 221, N. 3.
- 14) $\int \frac{\sin \{(2b+1)x\} \cdot \sin 2x}{1 - 2q \cos 2x + q^2} x^{2a} dx = 0$ V. T. 221, N. 4.
- 15) $\int \frac{\sin \{(2b+1)x\} \cdot \cos 2x}{1 - 2q \cos 2x + q^2} x^{2a+1} dx = 0$ V. T. 221, N. 9, 21.
- 16) $\int \frac{\cos \{(2b+1)x\}}{1 - 2q \cos 2x + q^2} x^{2a} dx = 0$ V. T. 221, N. 6.

$$17) \int \frac{\cos 2bx \cdot \sin x}{1 - 2q \cos 2x + q^2} x^{2a+1} dx = 0 \text{ V. T. 221, N. 7.}$$

$$18) \int \frac{\cos 2bx \cdot \cos x}{1 - 2q \cos 2x + q^2} x^{2a} dx = 0 \text{ V. T. 221, N. 6.}$$

$$19) \int \frac{\cos \{(2b+1)x\} \cdot \sin x}{1 - 2q \cos 2x + q^2} x^{2a+1} dx = (-1)^a \frac{\pi}{2^{2a+1}} \frac{q^b}{1+q} (lq)^{2a+1} \text{ V. T. 221, N. 7.}$$

$$20) \int \frac{\cos \{(2b+1)x\} \cdot \cos x}{1 - 2q \cos 2x + q^2} x^{2a} dx = (-1)^a \frac{\pi}{2^{2a+1}} \frac{q^b}{1-q} (lq)^{2a} \text{ V. T. 221, N. 6.}$$

$$21) \int \frac{\cos \{(2b+1)x\} \cdot \sin 2x}{1 - 2q \cos 2x + q^2} x^{2a+1} dx = 0 \text{ V. T. 221, N. 8.}$$

$$22) \int \frac{\cos \{(2b+1)x\} \cdot \cos 2x}{1 - 2q \cos 2x + q^2} x^{2a} dx = 0 \text{ V. T. 221, N. 14, 16.}$$

[Dans 9) à 22) on a $0 < q < 1$.]

$$1) \int \frac{x \sin x}{q^2 + 2q \cos \lambda \cdot \cos x + \cos^2 x} dx = \frac{2\pi}{q} \operatorname{Cosec} \lambda \cdot \operatorname{Arctg} \left(\frac{h \sin \theta - q \sin \lambda}{1 - q \cos \lambda + h \cos \theta} \right) \text{ V. T. 222, N. 2, 3.}$$

$$2) \int \frac{\cos x + q \cos \lambda}{q^2 + 2q \cos \lambda \cdot \cos x + \cos^2 x} x \sin x dx = -\pi l \{ 1 - 2q \cos \lambda + 2h \cos \theta + q^2 + h^2 - 2qh \cos(\lambda - \theta) \}$$

$$3) \int \frac{r + p \cos x}{q^2 + 2q \cos \lambda \cdot \cos x + \cos^2 x} x \sin x dx = -\pi p l \{ 1 - 2q \cos \lambda + 2h \cos \theta + q^2 + h^2 - 2qh \cos(\lambda - \theta) \} + \frac{r - pq \cos \lambda}{q \sin \lambda} 2\pi \operatorname{Arctg} \left(\frac{h \sin \theta - q \sin \lambda}{1 - q \cos \lambda + h \cos \theta} \right) \text{ (IV, 340).}$$

[Dans 1) à 3) on a $Tg 2\theta = \frac{q^2 \sin 2\lambda}{q^2 \cos 2\lambda - 1}$, $h^2 = 1 - 2q^2 \cos 2\lambda + q^4$.]

$$4) \int \frac{\frac{1}{2}\pi - x}{\sin^2 x + (p \sin x + q \cos x)^2} dx = \frac{\pi}{q} \left\{ \frac{1}{2} \operatorname{Arctg} \left(\frac{2pq}{1 + p^2 - q^2} \right) - \operatorname{Arctg} \left(\frac{2p}{1 - p^2 - q^2} \right) \right\}$$

V. T. 254, N. 8.

$$5) \int \frac{\sin x}{1 - \cos \lambda \cdot \cos x} \frac{x}{1 - \cos \mu \cdot \cos x} dx = \pi \operatorname{Cosec} \left\{ \frac{1}{2}(\lambda + \mu) \right\} \cdot \operatorname{Cosec} \left\{ \frac{1}{2}(\lambda - \mu) \right\} \cdot l \frac{1 + Tg \frac{1}{2}\lambda}{1 + Tg \frac{1}{2}\mu}$$

V. T. 219, N. 5.

$$6) \int \frac{x \sin x}{(1 - 2p \cos x + p^2)^2} dx = \frac{\pi}{(1-p)(1+p)^2} [p^2 < 1], = \frac{\pi}{p(p-1)(p+1)^2} [p^2 > 1]$$

V. T. 65, N. 1.

$$7) \int \frac{(1+p^2) \cos x - 2p}{(1-2p \cos x + p^2)^2} x^2 dx = \frac{2\pi}{p} \ell \frac{p}{1+p} [p^2 \geq 1], = -\frac{2\pi}{p} \ell(1+p) [p^2 < 1]$$

V. T. 221, N. 2.

$$8) \int \frac{x \sin x}{(1-2p \cos x + p^2)^2} dx = \frac{p^2 - 2p + 2}{2(1+p)^2(1-p)^2} [p^2 < 1], = \frac{2p^2 - 2p + 1}{2p(p+1)^2(p-1)^2} [p^2 > 1]$$

V. T. 66, N. 2.

$$9) \int \frac{x \sin x}{(1-2p \cos x + p^2)^{a+1}} dx = \frac{\pi}{2pa} \left\{ \frac{-1}{(1+p)^{2a}} + \frac{1}{(1-p^2)^{2a-1}} \sum_0^{a-1} \binom{a-1}{n}^2 p^{2n} \right\} [p^2 < 1], =$$

$$= \frac{\pi}{2pa} \left\{ \frac{-1}{(1+p)^{2a}} + \frac{1}{(p^2-1)^{2a-1}} \sum_0^{a-1} \binom{a-1}{n}^2 p^{2n} \right\} [p^2 > 1] \text{ V. T. 66, N. 2.}$$

$$10) \int \frac{x \sin 2x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{2}{p^2} \{ \pi - 2F'(p) \} \text{ (VIII, 588).}$$

$$11) \int \frac{x \sin x}{\sqrt{1-2p \cos x + p^2}} dx = \frac{1}{p} \left\{ 2F'(p) - \frac{\pi}{1+p} \right\} \text{ (VIII, 588).}$$

$$1) \int \frac{x dx}{\sin x} = 3\pi \ell 2 \text{ V. T. 250, N. 7.}$$

$$2) \int \frac{\sin ax}{1 \pm p \cos x} x dx = \frac{2\pi}{\sqrt{1-p^2}} \left\{ (\mp 1)^a \frac{\{1 + \sqrt{1-p^2}\}^a - \{1 - \sqrt{1-p^2}\}^a}{p^a} \ell \frac{2\sqrt{1 \pm p}}{\sqrt{1+p} + \sqrt{1-p}} + \right.$$

$$\left. + \sum_1^{a-1} \frac{(\mp 1)^n}{a-n} \frac{\{1 + \sqrt{1-p^2}\}^n - \{1 - \sqrt{1-p^2}\}^n}{p^n} \right\} [p^2 < 1] \text{ (IV, 342).}$$

$$3) \int \frac{\cos ax}{1 \pm p \cos x} x dx = \frac{2\pi^2}{\sqrt{1-p^2}} \left(\frac{1 - \sqrt{1-p^2}}{\pm p} \right)^a [p^2 < 1] \text{ (IV, 342).}$$

$$4) \int \frac{x \sin x}{1-2p \cos x + p^2} dx = \frac{2\pi}{p} \ell(1-p) [p^2 < 1], = \frac{2\pi}{p} \ell \frac{p-1}{p} [p^2 > 1] \text{ V. T. 332, N. 1.}$$

$$5) \int \frac{x \sin ax}{1-2p \cos x + p^2} dx = \frac{2\pi}{1-p^2} \left\{ (p^{-a} - p^a) \ell(1-p) + \sum_1^{a-1} \frac{p^{-n} - p^n}{a-n} \right\} \text{ (IV, 342).}$$

$$6) \int \frac{\sin bx}{1-2p \cos x + p^2} x^{a+1} dx = (-1)^{a+1} \frac{\pi p^b}{1-p^2} (\ell p)^{2a+1} \text{ V. T. 221, N. 3.}$$

$$7) \int \frac{\sin bx \cdot \sin x}{1-2p \cos x + p^2} x^{2a} dx = (-1)^a \frac{\pi}{2} p^{b-1} (\ell p)^{2a} \text{ V. T. 221, N. 4.}$$

$$8) \int \frac{\text{Sin } b x \cdot \text{Cos } x}{1 - 2p \text{Cos } x + p^2} x^{2a+1} dx = (-1)^{a+1} \frac{\pi}{2} \frac{1+p^2}{1-p^2} p^{b-1} (lp)^{2a+1} \text{ V. T. 221, N. 5.}$$

$$9) \int \frac{\text{Sin } a x - p \text{Sin } \{(a+1)x\}}{1 - 2p \text{Cos } x + p^2} x dx = 2\pi p^a \left\{ l(1-p) + \sum_1^a \frac{1}{p^n} \right\} \text{ (VIII, 484).}$$

$$10) \int \frac{\text{Cos } b x}{1 - 2p \text{Cos } x + p^2} x^{2a} dx = (-1)^a \frac{\pi p^b}{1-p^2} (lp)^{2a} \text{ V. T. 221, N. 6.}$$

$$11) \int \frac{\text{Cos } b x \cdot \text{Sin } x}{1 - 2p \text{Cos } x + p^2} x^{2a+1} dx = (-1)^a \frac{\pi}{2} p^{b-1} (lp)^{2a+1} \text{ V. T. 221, N. 7.}$$

$$12) \int \frac{\text{Cos } b x \cdot \text{Cos } x}{1 - 2p \text{Cos } x + p^2} x^{2a} dx = (-1)^a \frac{\pi}{2} \frac{1+p^2}{1-p^2} p^{b-1} (lp)^{2a} \text{ V. T. 221, N. 8.}$$

[Dans 5) à 12) on a $0 \leq p \leq 1$.]

$$13) \int \frac{\text{Cos } a x - p \text{Cos } \{(a+1)x\}}{1 - 2p \text{Cos } x + p^2} x dx = 2\pi^2 p^a [p^2 < 1] \text{ (VIII, 484).}$$

$$1) \int \text{Sin } q x \frac{dx}{x} = \text{Si}(pq) \text{ (VIII, 289).}$$

$$2) \int x \text{Sin } x dx \sqrt{\text{Sin}^2 p - \text{Sin}^2 x} = \frac{1}{8} \pi \text{Sin}^2 p + \frac{1}{4} \pi \text{Cos}^2 p \cdot l \text{Cos } p \text{ (IV, 344).}$$

$$3) \int \frac{\sqrt{\text{Sin}^2 p - \text{Sin}^2 x} x dx}{\text{Sin } x} = \frac{\pi}{4} (1 + \text{Sin } p) l(1 + \text{Sin } p) + \frac{\pi}{4} (1 - \text{Sin } p) l(1 - \text{Sin } p) \text{ (IV, 344).}$$

$$4) \int \frac{x \text{Sin } x}{\sqrt{\text{Sin}^2 p - \text{Sin}^2 x}} dx = \frac{\pi}{2} l \text{Sec } p \text{ (IV, 344).}$$

$$5) \int \frac{x \text{Sin}^3 x}{\sqrt{\text{Sin}^2 p - \text{Sin}^2 x}} dx = -\frac{\pi}{4} (1 + \text{Sin}^2 p) l \text{Cos } p - \frac{\pi}{8} \text{Sin}^2 p \text{ V. T. 224, N. 2, 1.}$$

$$6) \int \frac{x}{\text{Sin } x \cdot \sqrt{\text{Sin}^2 p - \text{Sin}^2 x}} dx = \frac{\pi}{4} \text{Cosec } p \cdot l \frac{1 + \text{Sin } p}{1 - \text{Sin } p} \text{ (IV, 344).}$$

$$7) \int \frac{x \text{Sin } x}{\text{Cos}^2 x \cdot \sqrt{\text{Sin}^2 p - \text{Sin}^2 x}} dx = \frac{\pi}{2} \text{Sec}^2 p \cdot (1 - \text{Cos } p) \text{ (IV, 344).}$$

$$8) \int \frac{x \text{Sin } x}{1 - \text{Sin}^2 q \cdot \text{Sin}^2 x} \frac{dx}{\sqrt{\text{Sin}^2 p - \text{Sin}^2 x}} = \frac{\pi}{2 \text{Cos } q} \frac{1}{1 - \text{Sin}^2 p \cdot \text{Sin}^2 q} l \frac{\text{Cos } q + \sqrt{1 - \text{Sin}^2 p \cdot \text{Sin}^2 q}}{2 \text{Cos } p \cdot \text{Sin}^2 \frac{1}{2} q} \text{ (IV, 344).}$$

r. rat.;
Dir.

TABLE 224, suite.

Lim. 0 et p .

$$\frac{x \sin x}{q - \sin^2 x} \frac{dx}{\sqrt{\sin^2 p - \sin^2 x}} = \frac{\pi \sec q}{2 \sqrt{\sin^2 q - \sin^2 p}} \left\{ q - \arccos \left(\frac{\cos q}{\cos p} \right) \right\} \quad (\text{IV, 344}).$$

$$\frac{1 - x \cot x}{x \sqrt{\sin^2 p - \sin^2 x}} \cos x dx = \frac{\pi}{4} \operatorname{Cosec}^2 p - \frac{\pi}{8} \cos^2 p \cdot \operatorname{Cosec}^2 p \cdot l \frac{1 + \sin p}{1 - \sin p} \quad (\text{IV, 344}).$$

r. rat.;
Dir.

TABLE 225.

Lim. p et q .

$$\frac{x}{\sin^2 x - \sin^2 p} \frac{dx}{(\sin^2 q - \sin^2 x)} = \frac{\pi}{2} \sec p \cdot \operatorname{Cosec} q \cdot F(c, q) \quad (\text{VIII, 310}).$$

$$\frac{x}{x \sqrt{(\sin^2 x - \sin^2 p)(\sin^2 q - \sin^2 x)}} dx = \frac{\pi}{2} \frac{\sin p - \sin q}{\sin^2 p \cdot \sin q} + \frac{\pi}{2 \cos p \cdot \sin q} F(c, q) +$$

$$+ \frac{\pi \cos p}{2 \sin^2 p \cdot \sin q} E(c, q) \quad (\text{VIII, 310}).$$

$$\frac{x}{x \sqrt{(\sin^2 x - \sin^2 p)(\sin^2 q - \sin^2 x)}} dx = \frac{\pi}{2} \frac{\cos q - \cos p}{\cos^2 p \cdot \cos q} + \frac{\pi}{2 \cos p \cdot \sin q} F(c, q) +$$

$$+ \frac{\pi \sin q}{2 \cos p \cdot \cos^2 q} E(c, q) \quad (\text{VIII, 310}).$$

$$\frac{x \sin^2 x}{\sin^2 x - \sin^2 p} \frac{dx}{(\sin^2 q - \sin^2 x)} = \frac{\pi}{2 \cos p \cdot \sin q} F(c, q) - \frac{\pi \cos^2 q}{2 \cos p \cdot \sin q} \Pi(-\sin^2 \theta, c, q) -$$

$$- \frac{\pi}{4} l(1 + \sin^2 q - \sin^2 p) \quad (\text{IV, 345}).$$

$$\frac{x \sin^2 x}{\sin^2 x - \sin^2 p} \frac{dx}{(\sin^2 q - \sin^2 x)} = \frac{1}{8} (\sin^2 q - \sin^2 p) + \frac{\pi}{4 \cos p \cdot \sin q} (2 - \cos^2 p \cdot \cos^2 q) F(c, q) -$$

$$- \frac{\pi}{4} \cos p \cdot \sin q \cdot E(c, q) - \frac{1}{8} (1 + \sin^2 p + \sin^2 q) \pi l(1 - \sin^2 p + \sin^2 q) -$$

$$- \frac{\pi \cos^2 q}{4 \cos p \cdot \sin q} (1 + \sin^2 p + \sin^2 q) \Pi(-\sin^2 \theta, c, q) \quad (\text{IV, 346}).$$

$$\sqrt{\frac{\sin^2 q - \sin^2 x}{\sin^2 x - \sin^2 p}} = \frac{\pi}{4} l(1 - \sin^2 p + \sin^2 q) + \frac{\pi \cos^2 q}{2 \cos p \cdot \sin q} \Pi(-\sin^2 \theta, c, q) -$$

$$- \frac{\pi \cos^2 q}{2 \cos p \cdot \sin q} F(c, q) \quad \text{V. T. 225, N. 1, 4.}$$

$$\sqrt{\frac{\sin^2 x - \sin^2 p}{\sin^2 q - \sin^2 x}} = - \frac{\pi}{4} l(1 - \sin^2 p + \sin^2 q) - \frac{\pi \cos^2 q}{2 \cos p \cdot \sin q} \Pi(-\sin^2 \theta, c, q) +$$

$$+ \frac{\pi \cos p}{2 \sin q} E(c, q) \quad \text{V. T. 225, N. 1, 4.}$$

- 8) $\int \frac{x \operatorname{Ty}^2 x}{\sqrt{(\sin^2 x - \sin^2 p)(\sin^2 q - \sin^2 x)}} dx = \frac{\pi \sin q}{2 \cos p \cdot \cos^2 q} \{E(c, q) - \cot q + \cot q \cdot \cos q \cdot \sec p\}$
(VIII, 310).
- 9) $\int \frac{x}{\operatorname{Ty}^2 x \cdot \sqrt{(\sin^2 x - \sin^2 p)(\sin^2 q - \sin^2 x)}} dx = \frac{\pi}{2 \sin p \cdot \operatorname{Ty} p \cdot \sin q} \left\{E(c, q) + \frac{\sin p - \sin q}{\cos p}\right\}$
(VIII, 310).
- 10) $\int \frac{x}{\cos^4 x \cdot \sqrt{(\sin^2 x - \sin^2 p)(\sin^2 q - \sin^2 x)}} dx = \frac{\pi}{12 \cos^4 p \cdot \cos^2 q \cdot \sin q} \{(\cos^2 p + \cos^2 q + \cos^2 p \cdot \cos^2 q) 2 \sin 2q - (3 \cos^2 p + 3 \cos^2 q + 4 \cos^2 p \cdot \cos^2 q + 2 \cos p \cdot \cos q) \cos p \cdot \sin q + (2 \cos^2 p \cdot \cos^2 q + \cos^2 p + \cos^2 q - 1) 2 \cos p \cdot \cos q \cdot F(c, q) + (\cos^2 p + \cos^2 q + \cos^2 p \cdot \cos^2 q) 4 \cos p \cdot \sin q \cdot \operatorname{Ty} q \cdot E(c, q)\}$ (IV, 347*).
- [Partout on a ici $\cos \theta = \cos q \cdot \sec p$, $c = \sin \theta \cdot \operatorname{cosec} q$.]

- 1) $\int_0^\pi \cos p x \frac{dx}{x} = -\operatorname{Ci}(pq)$ (VIII, 289).
- 2) $\int_0^{1/\alpha\pi} \cos p x \cdot x^b dx = -\sum_{n=0}^{b-1} \frac{1^{n/1}}{p^{n+1}} \binom{b}{n} (2\alpha\pi)^{b-n} \cos\left(\frac{n+1}{2}\pi\right)$ (VIII, 248).
- 3) $\int_{\alpha\pi}^{c\pi} x \cos^{1/b} x dx = \frac{c^2 - a^2}{2} \pi^2 \frac{1^{b/1}}{2^{b/1}} \quad (\text{VIII, 248}).$
- 4) $\int_\lambda^{\frac{\pi}{2}} \frac{x \cos x}{\sqrt{\sin^2 x - \sin^2 \lambda}} dx = \frac{\pi}{2} \ell(1 + \cos \lambda)$ (IV, 348).
- 5) $\int_\lambda^{\frac{\pi}{2}} \frac{x \cos x}{\sin^2 x \cdot \sqrt{\sin^2 x - \sin^2 \lambda}} dx = \frac{\pi}{2} \operatorname{cosec} \lambda \cdot \left(1 - \operatorname{Tg} \frac{1}{2} \lambda\right)$ (IV, 348).

- 1) $\int_0^\pi \sin k x \frac{dx}{x} = \frac{1}{2} \pi$ (IV, 269).
- 2) $\int_0^\pi \sin x \frac{dx}{x^k} = 1$ (IV, 275).
- 3) $\int_0^\pi \cos x \frac{dx}{x^k} = \frac{1}{2} k \pi$ (IV, 277).
- 4) $\int_0^\pi \sin k x \frac{x dx}{1+x^2} = \frac{1}{2} \pi$ (IV, 282).
- 5) $\int_0^\pi \sin \{(q+k)x\} \cdot \cos \{(q-k)x\} \frac{x dx}{1+x^2} = \frac{\pi}{4} (1 + a^{-2q})$ (IV, 282)..

$$\begin{aligned}
 6) \int_0^\infty \frac{\sin\{(q-k)x\}}{\cos qx} \frac{dx}{x} &= 0 \text{ (IV, 296). } 7) \int_0^\infty \frac{\cos\{(q+k)x\}}{\sin qx} \frac{x dx}{1+x^2} = \frac{\pi e^q}{e^q - e^{-q}} - \frac{\pi}{2} \text{ (IV, 297).} \\
 8) \int_0^\infty \frac{\cos\{(q-k)x\}}{\sin qx} \frac{x}{1+x^2} dx &= \frac{\pi}{2} \frac{e^q + e^{-q}}{e^q - e^{-q}} \text{ (IV, 297).} \\
 9) \int_0^\infty \frac{\cos\{[(2a+1)q \pm k]x\}}{\sin qx} \frac{x}{1+x^2} dx &= \pi \frac{e^{-(2a+1)q}}{e^q - e^{-q}} \mp \frac{\pi}{2} \text{ (IV, 297).} \\
 10) \int_0^\infty \frac{\sin\{(2a+1)qx\} \cdot \sin kx}{\sin qx} \frac{x}{1+x^2} dx &= \frac{\pi}{2} \text{ (IV, 297).} \\
 11) \int_0^\infty \frac{x \sin x}{(\cos x - q)^2 - k^2} dx &= -\frac{\pi}{1+q} \text{ (IV, 340).} \quad 12) \int_1^q \cos kx \frac{dx}{x} = lq \text{ (VIII, 337).}
 \end{aligned}$$

$$\begin{aligned}
 1) \int_0^\infty \frac{\sin kx}{1+x} dx &= 0 \text{ (IV, 281).} \quad 2) \int_0^\infty \frac{\cos kx}{1+x} dx = 0 \text{ (IV, 281).} \\
 3) \int_0^\infty \frac{\sin\{(2k+1)x\} \cdot \operatorname{Tgx}}{\sin x} \frac{x}{p^2+x^2} dx &= \infty \text{ (IV, 299).} \\
 4) \int_0^\infty \sin\{(2k+1)x\} \cdot \operatorname{Tgx} \frac{dx}{p^2+x^2} &= \infty \text{ (IV, 299).} \\
 5) \int_0^\infty \frac{\cos 2kx \cdot \cot x}{\sin x} \frac{x dx}{p^2+x^2} &= \infty \text{ (IV, 299).} \quad 6) \int_0^\infty \frac{\cos\{(2k+1)x\}}{\sin x} \frac{x dx}{p^2+x^2} = 0 \text{ (IV, 299*).} \\
 7) \int_0^\infty \frac{\sin\{(2k+1)x\}}{\cos x} \frac{dx}{p^2+x^2} &= 0 \text{ (IV, 299*).} \quad 8) \int_0^\infty \frac{\cos 2kx}{\cos x} \frac{dx}{p^2+x^2} = 0 \text{ (IV, 299*).} \\
 9) \int_0^\infty \sin kx dx \sqrt{\frac{x}{x^2-1}} &= (\cos k + \sin k) \sqrt{\frac{\pi}{4k}} \text{ (IV, 320).} \\
 10) \int_0^\infty \cos kx dx \sqrt{\frac{x}{x^2-1}} &= (\cos k - \sin k) \sqrt{\frac{\pi}{4k}} \text{ (IV, 322).} \\
 11) \int_0^\infty \frac{\cos kx}{(q+2p \cos x)^a} dx &= \frac{a^{k/2}}{1^{k/2}} (q^2 - 4p^2)^{-1/2} \left\{ \frac{-4p}{q + \sqrt{q^2 - 4p^2}} \right\}^k \sqrt{\frac{\pi}{k}} \text{ (IV, 338).} \\
 12) \int_1^\infty \cos kx \frac{dx}{x} &= 0 \text{ (IV, 347).} \\
 13) \int_0^a \frac{\sin\{(2k+1)x\}}{\cos x} \frac{dx}{p^2+x^2} &= 0 \left[a < \frac{1}{2}\pi \right], = \infty \left[\frac{1}{2}\pi < a < \infty \right] \text{ (VIII, 376).}
 \end{aligned}$$

$$14) \int_0^a \frac{\sin \{(2k+1)x\}}{\cos x} \frac{x}{p^2+x^2} dx = 0 \left[a < \frac{1}{2} \pi \right], = \infty \left[\frac{1}{2} \pi < a < \infty \right] \text{ (VIII, 376).}$$

$$15) \int_0^a \frac{\sin \{[1 \pm (4k+1)]x\}}{\cos x} \frac{dx}{p^2+x^2} = \frac{2\pi}{4p^2+\pi^2} \left[a = \frac{1}{2} \pi \right], = \frac{4\pi}{4p^2+\pi^2} \left[\frac{1}{2} \pi < a < \frac{3\pi}{2} \right], =$$

$$= \frac{4\pi}{4p^2+\pi^2} - \frac{2\pi}{4p^2+9\pi^2} \left[a = \frac{3\pi}{2} \right], = \frac{4\pi}{4p^2+\pi^2} - \frac{4\pi}{4p^2+9\pi^2} + \dots - \frac{4\pi \cos b\pi}{4p^2+(2b-1)^2\pi^2} +$$

$$+ \frac{2\pi \cos b\pi}{4p^2+(2b+1)^2\pi^2} \left[a = \frac{2b+1}{2} \pi \right], = \frac{4\pi}{4p^2+\pi^2} - \frac{4\pi}{4p^2+9\pi^2} + \dots + \frac{4\pi \cos b\pi}{4p^2+(2b+1)^2\pi^2}$$

$$\left[a = \frac{2b+1}{2} \pi + c, c < \pi \right] \text{ (VIII, 376).}$$

$$16) \int_0^a \frac{\sin \{[1 \pm (4k+1)]x\}}{\cos x} \frac{x}{p^2+x^2} dx = \frac{\pi^2}{4p^2+\pi^2} \left[a = \frac{1}{2} \pi \right], = \frac{2\pi^2}{4p^2+\pi^2} \left[\frac{1}{2} \pi < a < \frac{3\pi}{2} \right], =$$

$$= \frac{2\pi^2}{4p^2+\pi^2} - \frac{\pi^2}{4p^2+9\pi^2} \left[a = \frac{3\pi}{2} \right], = \frac{2\pi^2}{4p^2+\pi^2} - \frac{2\pi^2}{4p^2+9\pi^2} + \dots - \frac{2\pi^2 \cos b\pi}{4p^2+(2b-1)^2\pi^2} +$$

$$+ \frac{\pi^2 \cos b\pi}{4p^2+(2b+1)^2\pi^2} \left[a = \frac{2b+1}{2} \pi \right], = \frac{2\pi^2}{4p^2+\pi^2} - \frac{2\pi^2}{4p^2+9\pi^2} + \dots + \frac{2\pi^2 \cos b\pi}{4p^2+(2b+1)^2\pi^2}$$

$$\left[a = \frac{2b+1}{2} \pi + c, c < \pi \right] \text{ (VIII, 377).}$$

$$17) \int_0^a \sin \{(2k+1)x\} \cdot \text{Tang } x \frac{dx}{p^2+x^2} = 0 \left[a < \frac{1}{2} \pi \right], = \infty \left[\frac{1}{2} \pi < a < \infty \right] \text{ (VIII, 377).}$$

$$18) \int_0^a \frac{\cos 2kx}{\cos x} \frac{dx}{p^2+x^2} = 0 \left[a < \frac{1}{2} \pi \right], = \infty \left[\frac{1}{2} \pi < a < \infty \right] \text{ (VIII, 377).}$$

$$19) \int_0^a \sin \{[1 \pm (4k+1)]x\} \cdot \text{Tg } x \frac{dx}{p^2+x^2} = \frac{2\pi}{4p^2+\pi^2} \left[a = \frac{1}{2} \pi \right], = \frac{4\pi}{4p^2+\pi^2} \left[\frac{1}{2} \pi < a < \frac{3\pi}{2} \right], =$$

$$= \frac{4\pi}{4p^2+\pi^2} + \frac{2\pi}{4p^2+9\pi^2} \left[a = \frac{3\pi}{2} \right], = \frac{4\pi}{4p^2+\pi^2} + \frac{4\pi}{4p^2+9\pi^2} + \dots + \frac{4\pi}{4p^2+(2b-1)^2\pi^2} +$$

$$+ \frac{2\pi}{4p^2+(2b+1)^2\pi^2} \left[a = \frac{2b+1}{2} \pi \right], = \frac{4\pi}{4p^2+\pi^2} + \frac{4\pi}{4p^2+9\pi^2} + \dots + \frac{4\pi}{4p^2+(2b+1)^2\pi^2}$$

$$\left[a = \frac{2b+1}{2} \pi + c, c < \pi \right], = \frac{\pi}{2p} \frac{e^p - e^{-p}}{e^p + e^{-p}} [a = \infty] \text{ (VIII, 377).}$$

$$20) \int_0^a \frac{\cos \{(4k \pm 1)x\}}{\cos x} \frac{dx}{p^2+x^2} = \frac{\pm 2\pi}{4p^2+\pi^2} \left[a = \frac{1}{2} \pi \right], = \frac{\pm 4\pi}{4p^2+\pi^2} \left[\frac{1}{2} \pi < a < \frac{3\pi}{2} \right], =$$

$$= \pm \frac{4\pi}{4p^2+\pi^2} \pm \frac{2\pi}{4p^2+9\pi^2} \left[a = \frac{3\pi}{2} \right], = \pm \left\{ \frac{4\pi}{4p^2+\pi^2} + \frac{4\pi}{4p^2+9\pi^2} + \dots + \right.$$

$$+ \frac{4\pi}{4p^2 + (2b-1)^2\pi^2} + \frac{2\pi}{4p^2 + (2b+1)^2\pi^2} \left[a = \frac{2b+1}{2}\pi \right], = \pm \left\{ \frac{4\pi}{4p^2 + \pi^2} + \right. \\ \left. + \frac{4\pi}{4p^2 + 9\pi^2} + \dots + \frac{4\pi}{4p^2 + (2b+1)^2\pi^2} \right\} \left[a = \frac{2b+1}{2}\pi + c, c < \pi \right], = \\ = \frac{\pi}{2p} \frac{e^p - e^{-p}}{e^p + e^{-p}} [a = \infty] \text{ (VIII, 377).}$$

$$21) \int_0^a \frac{\cos kx}{\sin x} \frac{x}{p^2 + x^2} dx = 0 \left[a < \frac{1}{2}\pi \right], = \infty \left[\frac{1}{2}\pi < a < \infty \right] \text{ (VIII, 378).}$$

$$22) \int_0^a \sin kx \frac{dx}{(p^2 + x^2)^r} = 0 = \quad 23) \int \cos kx \frac{dx}{(p^2 + x^2)^r} [0 < a < \infty] \text{ (VIII, 378).}$$

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TABLE 229.

Lim. 0 et 1.

$$1) \int x^{2a} \operatorname{Arcsin} x dx = \frac{1}{2a+1} \left\{ \frac{\pi}{2} - \frac{2^{a/2}}{1^{a+1/2}} \right\} \text{ (VIII, 466).}$$

$$2) \int x^{2a-1} \operatorname{Arcsin} x dx = \frac{\pi}{4a} \left\{ 1 - \frac{1^{a/2}}{2^{a/2}} \right\} \text{ (VIII, 466).}$$

$$3) \int (1-x^2)^{a-1} x \operatorname{Arcsin} x dx = \frac{\pi}{2^{a+1}a} \frac{1^{a/2}}{1^{a/2}} \text{ V. T. 8, N. 13.}$$

$$4) \int x^{2a} \operatorname{Arccos} x dx = \frac{1}{2a+1} \frac{2^{a/2}}{3^{a/2}} \text{ V. T. 229, N. 1.}$$

$$5) \int x^{2a-1} \operatorname{Arccos} x dx = \frac{\pi}{4a} \frac{1^{a/2}}{2^{a/2}} \text{ V. T. 229, N. 2.}$$

$$6) \int x \operatorname{Arctg} x dx = \frac{\pi}{4} - \frac{1}{2} \text{ V. T. 229, N. 7.}$$

$$7) \int x^{p-1} \operatorname{Arctg} x dx = \frac{1}{4p} \left\{ \pi + Z' \left(\frac{p+1}{4} \right) - Z' \left(\frac{p+3}{4} \right) \right\} \text{ V. T. 2, N. 1.}$$

$$8) \int x^{p-1} \operatorname{Arccot} x dx = \frac{1}{4p} \left\{ \pi + Z' \left(\frac{p+3}{4} \right) - Z' \left(\frac{p+1}{4} \right) \right\} \text{ V. T. 2, N. 1.}$$

$$9) \int x^2 (\operatorname{Arctg} x)^2 dx = \frac{1}{3} \left\{ -\frac{\pi}{4} \log 2 - \frac{\pi}{2} + \frac{1}{16} \pi^2 + 1 + \sum_{n=1}^{\infty} \frac{(-1)^n}{(2n+1)^2} \right\} \text{ V. T. 231, N. 21.}$$

- 1) $\int \operatorname{Arcsin} x \frac{dx}{x} = \frac{1}{2} \pi \log 2$ (VIII, 594).
- 2) $\int (\operatorname{Arcsin} x)^p \frac{dx}{x} = \left(\frac{\pi}{2}\right)^p \left\{ 1 - \sum_{n=1}^{\infty} \frac{2}{p+2n} \sum_{m=1}^{\infty} \frac{1}{(2n)^{2m}} \right\}$ V. T. 205, N. 7.
- 3) $\int \operatorname{Arctg} x \frac{dx}{x} = \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 108, N. 10. 4) $\int \operatorname{Arctg} x \frac{dx}{x^2} = \infty$ V. T. 78, N. 2.
- 5) $\int \operatorname{Arctg} x \frac{x^p - x^{-p}}{x} dx = \frac{\pi}{2p} \left(1 - \sec \frac{1}{2} p \pi \right)$ V. T. 4, N. 7.
- 6) $\int \operatorname{Arccot} x \frac{x^p - x^{-p}}{x} dx = \frac{\pi}{2p} \left\{ 1 + \sec \frac{1}{2} p \pi \right\}$ V. T. 4, N. 7.
- 7) $\int \operatorname{Arctg} q x \cdot \operatorname{Arcsin} x \frac{dx}{x^2} = \frac{1}{2} q \pi \log \frac{1 + \sqrt{1+q^2}}{\sqrt{1+q^2}} + \frac{\pi}{2} \log \{ q + \sqrt{1+q^2} \} - \frac{\pi}{2} \operatorname{Arctg} q$
V. T. 235, N. 10 et T. 244, N. 11.
- 8) $\int (\operatorname{Arcsin} x)^2 \frac{dx}{x^2} = -\frac{1}{4} \pi^2 + 4 \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 243, N. 10.
- 9) $\int (\operatorname{Arcsin} x)^p \frac{dx}{x^2} = p \left(\frac{\pi}{2}\right)^{p-1} \left[1 + \sum_{n=1}^{\infty} \left\{ \frac{1}{4^{n-1}} \frac{2^{2n-1} - 1}{p+2n-1} \sum_{m=1}^{\infty} \frac{1}{(2n)^{2m}} \right\} \right] - \left(\frac{\pi}{2}\right)^p$ V. T. 243, N. 14.
- 10) $\int (\operatorname{Arcsin} x)^2 \frac{dx}{x^2} = \frac{3}{2} \pi \log 2 - \frac{1}{16} \pi^2$ V. T. 243, N. 13.
- 11) $\int (\operatorname{Arctg} x)^2 \frac{dx}{x^2} = -\frac{1}{16} \pi^2 + \frac{1}{4} \pi \log 2 + \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 235, N. 12.
- 12) $\int (\operatorname{Arctg} x)^p \frac{dx}{x^2} = -\left(\frac{\pi}{4}\right)^p + \frac{p}{2^{2p-1}} \pi^{p-1} \left\{ 2 - \sum_{n=1}^{\infty} \frac{4}{p+2n-1} \sum_{m=1}^{\infty} \frac{1}{(4n)^{2m}} \right\}$ V. T. 235, N. 13.

- 1) $\int \operatorname{Arcsin} x \frac{x}{1+qx^2} dx = \frac{\pi}{2q} \log \frac{2\sqrt{1+q}}{1+\sqrt{1+q}} [q > 0]$ (VIII, 594).
- 2) $\int \operatorname{Arcsin} x \frac{x}{1-x^2} dx = \alpha$ (VIII, 467).
- 3) $\int \operatorname{Arcsin} x \frac{x}{1-p^2 x^2} dx = \frac{1}{2p^2} (\operatorname{Arcsin} p)^2 - \frac{\pi}{4p^2} \log(1-p^2)$ (VIII, 466*).

- 4) $\int \operatorname{Arcsin} x \frac{x dx}{p^2 - x^2} = \frac{1}{2} (\operatorname{Arccosec} p)^2 - \frac{\pi}{4} l \frac{p^2 - 1}{p^2}$ (VIII, 466*).
- 5) $\int \operatorname{Arcsin} x \frac{x}{1 - p^2 x^2} dx = \frac{\pi}{2p} l \frac{\sqrt{1+p} + \sqrt{1-p^2}}{\sqrt{1-p} + \sqrt{1-p^2}}$ V. T. 122, N. 12.
- 6) $\int \operatorname{Arcsin} x \frac{x^2}{1 - q^2 x^2} dx = \frac{\pi}{4q^2} l \frac{1 + \sqrt{1+q} + \sqrt{1-q} + \sqrt{1-q^2}}{4\sqrt{1-q^2}}$ V. T. 120, N. 16.
- 7) $\int \operatorname{Arccos} x \frac{dx}{1+x} = -\frac{1}{2} \pi l 2 + 2 \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 231, N. 9, 11.
- 8) $\int \operatorname{Arccos} x \frac{dx}{1-x} = \frac{1}{2} \pi l 2 + 2 \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 231, N. 9, 11.
- 9) $\int \operatorname{Arccos} x \frac{dx}{1-x^2} = 2 \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 206, N. 1.
- 10) $\int \operatorname{Arccos} x \frac{dx}{\sin^2 \lambda - x^2} = 2 \operatorname{Cosec} \lambda \cdot \sum_0^{\infty} \frac{\sin \{(2n+1)\lambda\}}{(2n+1)^2}$ V. T. 207, N. 1.
- 11) $\int \operatorname{Arccos} x \frac{x}{1-x^2} dx = \frac{1}{2} \pi l 2$ V. T. 120, N. 10.
- 12) $\int \operatorname{Arccos} x \frac{x}{1+qx^2} dx = \frac{\pi}{2q} l \frac{1 + \sqrt{1+q}}{2} [q > 0]$ (VIII, 594).
- 13) $\int \operatorname{Arccos} x \frac{x}{1-q^2 x^2} dx = \frac{\pi}{2q} l \frac{1 + \sqrt{1+q}}{1 + \sqrt{1-q}}$ V. T. 122, N. 12.
- 14) $\int \operatorname{Arccos} x \frac{x^2}{1-q^2 x^2} dx = \frac{\pi}{2q^2} l \frac{1 + \sqrt{1+q} + \sqrt{1-q} + \sqrt{1-q^2}}{4}$ V. T. 120, N. 16.
- 15) $\int \operatorname{Arctg} x \frac{dx}{1+x} = \frac{1}{8} \pi l 2$ V. T. 114, N. 3.
- 16) $\int \operatorname{Arctg} \left(\frac{\sqrt{p}}{x} \right) \frac{dx}{p+x} = \left\{ \frac{\pi}{4} + \frac{1}{2} \operatorname{Arctg}(\sqrt{p}) \right\} \cdot l \frac{1+p}{p}$ (VIII, 597*).
- 17) $\int \operatorname{Arctg}(x\sqrt{p}) \frac{dx}{1+px} = \frac{1}{2p} \operatorname{Arctg}(\sqrt{p}) \cdot l(1+p)$ (VIII, 597*).
- 18) $\int \operatorname{Arctg} x \frac{x}{1+x} dx = -\frac{\pi}{8} l 2 + \frac{\pi}{4} - \frac{1}{2} l 2$ V. T. 76, N. 3 et T. 231, N. 15.
- 19) $\int \operatorname{Arctg} px \frac{dx}{1+p^2 x^2} = \frac{1}{2p^2} \operatorname{Arctg} p \cdot l(1+p^2)$ (VIII, 597*).

$$20) \int \operatorname{Arctg} x \frac{x}{1+x^2} dx = \frac{1}{2} \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} - \frac{1}{8} \pi \log 2 \quad \text{V. T. 230, N. 3 et T. 235, N. 12.}$$

$$21) \int \operatorname{Arctg} x \frac{x^3}{1+x^2} dx = \frac{\pi}{4} - \frac{1}{2} + \frac{\pi}{8} \log 2 + \frac{1}{2} \sum_0^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2} \quad \text{V. T. 229, N. 6 et T. 231, N. 20.}$$

$$22) \int \operatorname{Arccot} x \frac{dx}{1+x} = \frac{3}{8} \pi \log 2 \quad \text{V. T. 114, N. 3.}$$

$$23) \int \operatorname{Arccot} \left(\frac{\sqrt{p}}{x} \right) \frac{dx}{p+x} = \frac{1}{2} \operatorname{Arccot}(\sqrt{p}) \cdot \log \frac{1+p}{p} \quad (\text{VIII, 597*}).$$

$$24) \int \operatorname{Arccot}(x\sqrt{p}) \frac{dx}{1+px} = \frac{1}{p} \left\{ \frac{\pi}{4} + \frac{1}{2} \operatorname{Arccot}(\sqrt{p}) \right\} \cdot \log(1+p) \quad (\text{VIII, 597*}).$$

$$25) \int \operatorname{Arccot} \left(\frac{p}{x} \right) \frac{dx}{p^2+x} = \frac{1}{2} \operatorname{Arccot} p \cdot \log \frac{1+p^2}{p^2} \quad (\text{VIII, 597*}).$$

$$26) \int \operatorname{Arccot} x \frac{x}{1+x^2} dx = \frac{3}{8} \pi \log 2 - \frac{1}{2} \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad \text{V. T. 248, N. 10 et T. 253, N. 10.}$$

$$1) \int \left(x \operatorname{Arccot} x - \frac{1}{x} \operatorname{Arctg} x \right) \frac{dx}{1-x^2} = -\frac{1}{4} \pi \log 2 \quad (\text{VIII, 355}).$$

$$2) \int \left(\frac{\pi}{4} - \operatorname{Arctg} x \right) \frac{dx}{1-x} = -\frac{\pi}{8} \log 2 + \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad \text{V. T. 114, N. 17.}$$

$$3) \int \left(\frac{\pi}{4} - x \operatorname{Arctg} x \right) \frac{dx}{1-x} = \frac{\pi}{4} - \frac{1}{2} \log 2 - \frac{\pi}{8} \log 2 + \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad \text{V. T. 76, N. 3 et T. 232, N. 2.}$$

$$4) \int \left(\frac{\pi}{4} - \operatorname{Arctg} x \right) \frac{dx}{1-x^2} = \frac{1}{2} \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad \text{V. T. 115, N. 17.}$$

$$5) \int \left(\frac{\pi}{4} - \operatorname{Arctg} x \right) \frac{x}{1-x^2} dx = -\frac{\pi}{8} \log 2 + \frac{1}{2} \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad \text{V. T. 114, N. 26.}$$

$$6) \int \left(\frac{\pi}{4} - x \operatorname{Arctg} x \right) \frac{dx}{1-x^2} = \frac{\pi}{8} \log 2 + \frac{1}{2} \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad \text{V. T. 231, N. 15 et T. 232, N. 4.}$$

$$7) \int \left(\frac{\pi}{4} - x^2 \operatorname{Arctg} x \right) \frac{dx}{1-x^2} = \frac{\pi}{4} - \frac{1}{2} + \frac{\pi}{8} \log 2 + \frac{1}{2} \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad \text{V. T. 229, N. 6 et T. 232, N. 5.}$$

$$8) \int \left(\frac{\pi}{4} - x \operatorname{Arctg} x \right) \frac{x dx}{1-x^2} = \frac{\pi}{4} - \frac{1}{2} \log 2 - \frac{\pi}{4} \log 2 + \frac{1}{2} \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad \text{V. T. 231, N. 18 et T. 232, N. 3.}$$

- 9) $\int \left(\frac{\pi}{4} - x \operatorname{Arctg} x \right) \frac{x}{1+x^2} dx = \frac{1}{2} \ln 2 + \frac{1}{32} \pi^2 - \frac{\pi}{4} + \frac{\pi}{8} \ln 2$ V. T. 76, N. 3.
- 10) $\int \left(\frac{\pi}{4} - \operatorname{Arctg} x \right) \frac{x}{1-x^2} dx = \frac{\pi}{16} \ln 2$ V. T. 115, N. 20.
- 11) $\int \left(\frac{\pi}{4} - \operatorname{Arctg} x \right) \frac{x^2}{1-x^2} dx = -\frac{3\pi}{16} \ln 2 + \frac{1}{2} \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 114, N. 29.
- 12) $\int \left(\frac{\pi}{4} - x \operatorname{Arctg} x \right) \frac{dx}{1-x^2} = \frac{\pi^2}{32} + \frac{\pi}{8} \ln 2$ V. T. 231, N. 20 et T. 232, N. 6.
- 13) $\int \left(\frac{\pi}{4} - x^2 \operatorname{Arctg} x \right) \frac{dx}{1-x^2} = \frac{\pi^2}{32} + \frac{1}{2} \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 229, N. 6, T. 231, N. 20 et T. 232, N. 7.
- 14) $\int \left(\frac{\pi}{4} - x^2 \operatorname{Arctg} x \right) \frac{dx}{1-x^2} = \frac{\pi}{8} \ln 2 + \frac{\pi}{4} - \frac{1}{2} + \frac{\pi^2}{32}$ V. T. 76, N. 3 et T. 232, N. 12.
- 15) $\int \left(\frac{\pi}{4} - x \operatorname{Arctg} x \right) \frac{x}{1-x^2} dx = \frac{1}{64} \pi^2 - \frac{\pi}{16} \ln 2 + \frac{1}{4} \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 232, N. 8, 9.
- 16) $\int \left(\frac{\pi}{4} - x \operatorname{Arctg} x \right) \frac{x^2}{1-x^2} dx = \frac{\pi}{4} - \frac{1}{2} \ln 2 - \frac{1}{64} \pi^2 - \frac{3\pi}{16} \ln 2 + \frac{1}{4} \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 232, N. 8, 9.

- 1) $\int (\operatorname{Arccos} x)^p \frac{dx}{1+x} = \left(\frac{\pi}{2} \right)^p \sum_{i=1}^{\infty} \left\{ \frac{2^{2m}-1}{4^{m-1}} \frac{1}{p+2m} \sum_{i=1}^{\infty} \frac{1}{(2n)^{2m}} \right\}$ V. T. 205, N. 7 et T. 206, N. 3.
- 2) $\int (\operatorname{Arccos} x)^p \frac{dx}{1-x} = \left(\frac{\pi}{2} \right)^p \left\{ 2 - \sum_{i=1}^{\infty} \left(\frac{1}{4^{m-1}} \frac{1}{p+2m} \sum_{i=1}^{\infty} \frac{1}{(2n)^{2m}} \right) \right\}$ V. T. 205, N. 7 et T. 206, N. 3.
- 3) $\int (\operatorname{Arccos} x)^b \frac{dx}{x \pm q} = -2 \cos \frac{1}{2} b \pi \cdot 1^{b/2} \sum_{i=1}^{\infty} \frac{(\mp c)^n}{n^{b+1}} - 2 \sum_{i=1}^{\infty} \left\{ c^{2n} \sum_{i=0}^{\infty} \binom{b}{2m} (-1)^m \left(\frac{\pi}{2} \right)^{b-2m} \frac{1}{(2n)^{2m+1}} + \right.$
 $\left. + c^{2n-1} \sum_{i=0}^{\infty} \binom{b}{2m+1} (-1)^m \left(\frac{\pi}{2} \right)^{b-2m-1} \frac{1}{(2n+1)^{2m+1}} \right\}$ [où $c = q - \sqrt{q^2 - 1}$]
V. T. 207, N. 7.
- 4) $\int (\operatorname{Arccos} x)^p \frac{dx}{1-x^2} = \left(\frac{\pi}{2} \right)^p \left\{ 1 + \sum_{i=1}^{\infty} \left(\frac{1}{4^{m-1}} \frac{2^{2m-1}-1}{p+2m} \sum_{i=1}^{\infty} \frac{1}{(2n)^{2m}} \right) \right\}$ V. T. 206, N. 3.
- 5) $\int (\operatorname{Arccos} x)^p \frac{x}{1-x^2} dx = \left(\frac{\pi}{2} \right)^p \left\{ 1 - 2 \sum_{i=1}^{\infty} \left(\frac{1}{p+2m} \sum_{i=1}^{\infty} \frac{1}{(2n)^{2m}} \right) \right\}$ V. T. 205, N. 7.

- 1) $\int \operatorname{Arcsin} x \frac{dx}{(x+p)^2} = \frac{-\pi}{2(1+p)} + \frac{1}{\sqrt{1-p^2}} \operatorname{Arctg} \frac{1+\sqrt{1-p^2}}{p} [p^2 < 1], = \frac{-\pi}{2(1+p)} + \frac{1}{\sqrt{p^2-1}} \operatorname{Arcsin} \frac{\sqrt{p^2-1}}{p} [p^2 > 1] \text{ (VIII, 593).}$
- 2) $\int \operatorname{Arcsin} x \frac{x}{(1+qx^2)^2} dx = \frac{\pi}{4q} \frac{\sqrt{1+q}-1}{1+q} \text{ (VIII, 593).}$
- 3) $\int \operatorname{Arccos} x \frac{dx}{(x+p)^2} = \frac{\pi}{2p} + \frac{1}{\sqrt{1-p^2}} \operatorname{Arctg} \frac{p}{1+\sqrt{1-p^2}} [p^2 < 1], = \frac{\pi}{2p} - \frac{1}{\sqrt{p^2-1}} \operatorname{Arcsin} \frac{\sqrt{p^2-1}}{p} [p^2 > 1] \text{ (VIII, 593).}$
- 4) $\int \operatorname{Arccos} x \frac{x}{(1+qx^2)^2} dx = \frac{\pi}{4q} \frac{\sqrt{1+q}-1}{\sqrt{1+q}} \text{ (VIII, 593).}$
- 5) $\int \operatorname{Arccos} x \frac{x^{2p-1}}{(1-x^2)^{p+1}} dx = \frac{\pi}{4p} \operatorname{Sec} p \pi \left[p < \frac{1}{2} \right] \text{ V. T. 8, N. 12.}$
- 6) $\int (\operatorname{Arccos} x)^2 \frac{x}{(1-x^2)^2} dx = \frac{3}{2} \pi \operatorname{L} 2 - \frac{1}{16} \pi^2 \text{ V. T. 244, N. 9.}$
- 7) $\int \operatorname{Arctg} qx \frac{dx}{(1+px)^2} = \frac{1}{2} \frac{q}{p^2+q^2} \operatorname{Arctg} \frac{(1+p)^2}{1+q^2} + \frac{q^2-p}{(1+p)(p^2+q^2)} \operatorname{Arctg} q \text{ (VIII, 597*).}$
- 8) $\int \operatorname{Arctg} x \frac{2+x}{(1+x)^2} x dx = \frac{1}{4} \pi - \frac{3}{4} \operatorname{L} 2 \text{ V. T. 2, N. 11.}$
- 9) $\int \operatorname{Arctg} x \frac{2p-1-(2p-3)x^2}{(1+x^2)^{2p-1}} x^{2p-2} dx = \frac{\pi}{2^{2p}} - \frac{\{\Gamma(p)\}^2}{4\Gamma(2p)} \text{ V. T. 4, N. 16.}$
- 10) $\int \operatorname{Arccot} qx \frac{dx}{(1+px)^2} = \frac{1}{2} \frac{q}{p^2+q^2} \operatorname{Arctg} \frac{1+q^2}{(1+p)^2} + \frac{p}{p^2+q^2} \operatorname{Arctg} q + \frac{1}{1+p} \operatorname{Arccot} q \text{ (VIII, 597).}$
- 11) $\int \operatorname{Arccot} x \frac{2+x}{(1+x)^2} x dx = \frac{3}{4} \operatorname{L} 2 \text{ V. T. 2, N. 11.}$
- 12) $\int \operatorname{Arccot} x \frac{x}{(1+x^2)^2} dx = \frac{1}{16} \left\{ \pi + 2 + Z' \left(\frac{3}{4} \right) - Z' \left(\frac{5}{4} \right) \right\} \text{ V. T. 3, N. 11.}$

$$1) \int \operatorname{Arcsin} x \frac{x}{\cos^2 \lambda + x^2 \sin^2 \lambda} \frac{dx}{\cos^2 \mu + x^2 \sin^2 \mu} = \frac{\pi}{\sin(\lambda - \mu) \cdot \sin(\lambda + \mu)} \int \left(\cos \frac{1}{2} \mu \cdot \sec \frac{1}{2} \lambda \right) \\ \text{V. T. 122, N. 11.}$$

$$2) \int \operatorname{Arcsin} x \frac{x}{1 - x^2 \sin^2 \lambda} \frac{dx}{1 - x^2 \sin^2 \mu} = \frac{\pi}{\sin^2 \lambda - \sin^2 \mu} \int \frac{\cos \frac{1}{2} \lambda \cdot \sqrt{\cos \mu}}{\cos \frac{1}{2} \mu \cdot \sqrt{\cos \lambda}} \text{V. T. 122, N. 11.}$$

$$3) \int \operatorname{Arccos} x \frac{x}{\cos^2 \lambda + x^2 \sin^2 \lambda} \frac{dx}{\cos^2 \mu + x^2 \sin^2 \mu} = \frac{1}{2} \frac{\pi}{\sin(\lambda + \mu) \cdot \sin(\lambda - \mu)} \int \frac{1 + \sec \lambda}{1 + \sec \mu} \\ \text{V. T. 122, N. 11.}$$

$$4) \int \operatorname{Arccos} x \frac{x}{1 - x^2 \sin^2 \lambda} \frac{dx}{1 - x^2 \sin^2 \mu} = \frac{\pi}{\sin^2 \lambda - \sin^2 \mu} \int \frac{\cos \frac{1}{2} \mu}{\cos \frac{1}{2} \lambda} \text{V. T. 122, N. 11.}$$

$$5) \int \operatorname{Arctg} p x \frac{3 - p^2 + (1 - 3p^2)p^2 x^2}{(1 - p^4 x^2)(1 - p^4 x^4)} dx = \frac{1}{2p} \operatorname{Arctg} p \cdot \int \frac{1 + p^2}{1 - p^2} [p^2 < 1] \text{(VIII, 597*)}$$

$$6) \int \operatorname{Arctg} \frac{x}{p} \frac{(3p^2 - 1)p^2 - (p^2 - 3)x^2}{(p^4 - x^2)(p^4 - x^4)} dx = \frac{1}{2p^2} \operatorname{Arccot} p \cdot \int \frac{p^2 + 1}{p^2 - 1} [p^2 > 1] \text{(VIII, 598*)}$$

$$7) \int \operatorname{Arccot} p x \frac{3 - p^2 + (1 - 3p^2)p^2 x^2}{(1 - p^4 x^2)(1 - p^4 x^4)} dx = \frac{\pi}{4p} \int (1 + p^2) + \frac{1}{2p} \operatorname{Arccot} p \cdot \int \frac{1 + p^2}{1 - p^2} [p^2 < 1] \\ \text{(VIII, 597*)}$$

$$8) \int \operatorname{Arccot} \frac{x}{p} \frac{(3p^2 - 1)p^2 - (p^2 - 3)x^2}{(p^4 - x^2)(p^4 - x^4)} dx = \frac{\pi}{2p^2} \int \frac{1 + p^2}{p^2} + \frac{1}{2p^2} \operatorname{Arctg} p \cdot \int \frac{p^2 + 1}{p^2 - 1} [p^2 > 1] \\ \text{(VIII, 598*)}$$

$$9) \int \operatorname{Arcsin} x \frac{dx}{x(1 - x^2)} = \infty \text{ (IV, 353).}$$

$$10) \int \operatorname{Arcsin} x \frac{dx}{x(1 + q x^2)} = \frac{\pi}{2} \int \frac{1 + \sqrt{1 + q}}{\sqrt{1 + q}} \text{V. T. 230, N. 1 et T. 231, N. 1.}$$

$$11) \int \operatorname{Arctg} x \frac{dx}{x(1 + x)} = -\frac{\pi}{8} \int 2 + \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{V. T. 115, N. 3.}$$

$$12) \int \operatorname{Arctg} x \frac{dx}{x(1 + x^2)} = \frac{\pi}{8} \int 2 + \frac{1}{2} \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{V. T. 204, N. 2.}$$

$$13) \int (\operatorname{Arctg} x)^p \frac{dx}{x(1 + x^2)} = \frac{\pi^p}{2^{2p}} \left\{ 1 - \sum_{n=1}^{\infty} \frac{2}{p+2n} \sum_{m=1}^{\infty} \frac{1}{(4n)^{2m}} \right\} \text{V. T. 204, N. 6.}$$

$$14) \int \operatorname{Arcsin} x \frac{x}{\frac{1}{2}(p+1) - x^2} dx = -\frac{\pi}{4} \int \{2(1-p)\} [p^2 < 1], = \frac{\pi}{4} \int \frac{p + \sqrt{p^2 - 1}}{2(p-1)} [p^2 > 1] \\ \text{V. T. 219, N. 4.}$$

$$15) \int \operatorname{Arcsin} x \frac{x}{(1-p)^2 + 4px^2} dx = \frac{\pi}{8p} l(1+p) [p^2 < 1], = \frac{\pi}{8p} l \frac{1+p}{p} [p^2 > 1] \text{ V. T. 221, N. 2.}$$

$$16) \int \operatorname{Arcsin} x \frac{dx}{1+2px+p^2} = \frac{1}{2p} \left\{ \pi l(1+p) - \sum_0^{\infty} \frac{1}{2n+1} \frac{2^{n/2}}{3^{n/2}} \left(\frac{2p}{1+p^2} \right)^{2n+1} \right\} \text{ V. T. 121, N. 1.}$$

$$17) \int \operatorname{Arccos} x \frac{x}{(1+p)^2 - 4px^2} dx = \frac{\pi}{8p} l(1+p) [p^2 < 1], = \frac{\pi}{8p} l \frac{1+p}{p} [p^2 > 1] \text{ V. T. 221, N. 2.}$$

$$18) \int \operatorname{Arccos} x \frac{x}{\frac{1}{2}(1+p) - x^2} dx = \frac{\pi}{4} l \{ 2(1+p) \} [p^2 < 1], = \frac{\pi}{4} l \frac{2(1+p)}{p + \sqrt{p^2 - 1}} [p^2 > 1]$$

V. T. 219, N. 4.

$$19) \int \operatorname{Arccos} x \frac{dx}{1+2px+p^2} = \frac{1}{2p} \left\{ -\frac{\pi}{2} l(1+p^2) + \sum_0^{\infty} \frac{1}{2n+1} \frac{2^{n/2}}{3^{n/2}} \left(\frac{2p}{1+p^2} \right)^{2n+1} \right\} \text{ V. T. 121, N. 1.}$$

$$20) \int \operatorname{Arctg} x \frac{1-2x-x^2}{1+x} \frac{dx}{1+x^2} = \frac{3\pi}{8} l2 + \sum_0^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2} \text{ V. T. 115, N. 18.}$$

$$21) \int \operatorname{Arctg} x \frac{1-x}{1+x} \frac{dx}{1+x^2} = \frac{\pi}{4} l2 + \frac{1}{2} \sum_0^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2} \text{ V. T. 231, N. 20 et T. 235, N. 20.}$$

$$22) \int \operatorname{Arctg} x \frac{1-x^2}{x(1+x)} \frac{dx}{1+x^2} = \frac{1}{2} \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 231, N. 20 et T. 235, N. 11, 20.}$$

$$23) \int \operatorname{Arctg} x \frac{1+2x-x^2}{x(1+x)} \frac{dx}{1+x^2} = \frac{3\pi}{8} l2 \text{ V. T. 230, N. 3 et T. 235, N. 20.}$$

$$24) \int \left(\frac{\pi}{4} - \operatorname{Arctg} x \right) \frac{1+2x-x^2}{1-x} \frac{dx}{1+x^2} = \frac{3\pi}{8} l2 \text{ V. T. 115, N. 19.}$$

$$25) \int \left(\frac{\pi}{4} - \operatorname{Arctg} x \right) \frac{1+x}{1-x} \frac{dx}{1+x^2} = \frac{\pi}{8} l2 + \frac{1}{2} \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 232, N. 2 et T. 235, N. 24.}$$

$$1) \int \operatorname{Arcsin} x \cdot x dx \sqrt{1-p^2 x^2} = \frac{1}{9p^2} \left[-\frac{3}{2} \pi \sqrt{1-p^2}^3 - (1-p^2) F'(p) + 2(2-p^2) E'(p) \right]$$

V. T. 209, N. 1.

$$2) \int \operatorname{Arcsin} x \cdot x^3 dx \sqrt{1-p^2 x^2} = \frac{1}{225p^4} \left[-15(2+3p^2) \frac{\pi}{2} \sqrt{1-p^2}^3 - (1+12p^2)(1-p^2) F'(p) + (31+19p^2-24p^4) E'(p) \right] \text{ V. T. 209, N. 5.}$$

$$3) \int \operatorname{Arcsin} x . x^5 d x \sqrt{1-p^2 x^2} = \frac{1}{11025 p^6} \left[-105 (8 + 12 p^2 + 15 p^4) \frac{\pi}{2} \sqrt{1-p^2} + \right. \\ \left. + (62 - 111 p^2 - 360 p^4) (1-p^2) F'(p) + 2 (389 + 176 p^2 + 204 p^4 - 360 p^6) E'(p) \right]$$

V. T. 209, N. 8.

$$4) \int \operatorname{Arcsin} x . x^7 d x \sqrt{1-p^2 x^2} = \frac{1}{99225 p^8} \left[-315 (16 + 24 p^2 + 30 p^4 + 35 p^6) \frac{\pi}{2} \sqrt{1-p^2} + \right. \\ \left. + (652 - 141 p^2 - 900 p^4 - 2240 p^6) (1-p^2) F'(p) + (4388 + 1727 p^2 + 1503 p^4 + \right. \\ \left. + 2120 p^6 - 4480 p^8) E'(p) \right] \text{ V. T. 209, N. 10.}$$

$$5) \int \operatorname{Arcsin} x . x d x \sqrt{1-p^2 + p^2 x^2} = \frac{1}{9 p^2} \left[\frac{3 \pi}{2} + (1-p^2) F'(p) - 2 (2-p^2) E'(p) \right]$$

V. T. 209, N. 11.

$$6) \int \operatorname{Arcsin} x . x^3 d x \sqrt{1-p^2 + p^2 x^2} = \frac{1}{225 p^4} \left[-15 (2 - 5 p^2) \frac{\pi}{2} - (1 - 13 p^2) (1-p^2) F'(p) + \right. \\ \left. + (31 - 81 p^2 + 26 p^4) E'(p) \right] \text{ V. T. 209, N. 15.}$$

$$7) \int \operatorname{Arcsin} x . x^5 d x \sqrt{1-p^2 + p^2 x^2} = \frac{1}{11025 p^6} \left[105 (8 - 28 p^2 + 35 p^4) \frac{\pi}{2} - (62 - 13 p^2 - \right. \\ \left. - 409 p^4) (1-p^2) F'(p) - 2 (389 - 1343 p^2 + 1723 p^4 - 409 p^6) E'(p) \right] \text{ V. T. 209, N. 18.}$$

$$8) \int \operatorname{Arcsin} x . x^7 d x \sqrt{1-p^2 + p^2 x^2} = \frac{1}{99225 p^8} \left[-315 (16 - 72 p^2 + 126 p^4 - 105 p^6) \frac{\pi}{2} + \right. \\ \left. + (652 - 1815 p^2 + 774 p^4 + 2629 p^6) (1-p^2) F'(p) + (4388 - 19279 p^2 + 33012 p^4 - \right. \\ \left. - 27859 p^6 + 5258 p^8) E'(p) \right] \text{ V. T. 209, N. 20.}$$

$$9) \int \operatorname{Arccos} x . x d x \sqrt{1-p^2 x^2} = \frac{1}{9 p^2} \left[\frac{3 \pi}{2} + (1-p^2) F'(p) - 2 (2-p^2) E'(p) \right] \text{ V. T. 209, N. 11.}$$

$$10) \int \operatorname{Arccos} x . x^3 d x \sqrt{1-p^2 x^2} = \frac{1}{225 p^4} \left[15 \pi + (1 + 12 p^2) (1-p^2) F'(p) - \right. \\ \left. - (31 + 19 p^2 - 24 p^4) E'(p) \right] \text{ V. T. 209, N. 12.}$$

$$11) \int \operatorname{Arccos} x^5 d x \sqrt{1-p^2 x^2} = \frac{1}{11025 p^6} [420 \pi - (62 - 111 p^2 - 360 p^4) (1-p^2) F'(p) - \\ - 2 (389 + 176 p^2 + 204 p^4 - 360 p^6) E'(p)] \text{ V. T. 209, N. 13.}$$

$$12) \int \operatorname{Arccos} x \cdot x' dx \sqrt{1-p^2 x^2} = \frac{1}{99225 p^5} [280 \pi - (652 - 141 p^2 - 900 p^4 - 2240 p^6) (1-p^2)$$

$$F'(p) - (4388 + 1727 p^2 + 1503 p^4 + 2120 p^6 - 4480 p^8) E'(p)] \quad \text{V. T. 209, N. 14.}$$

$$13) \int \operatorname{Arccos} x \cdot x dx \sqrt{1-p^2 + p^2 x^2} = \frac{1}{9 p^2} \left[-\frac{3\pi}{2} \sqrt{1-p^2} - (1-p^2) F'(p) + 2(2-p^2) E'(p) \right]$$

$$\text{V. T. 209, N. 1.}$$

$$14) \int \operatorname{Arccos} x \cdot x^2 dx \sqrt{1-p^2 + p^2 x^2} = \frac{1}{225 p^4} [15 \pi \sqrt{1-p^2} + (1-13 p^2)(1-p^2) F'(p) -$$

$$-(31-81 p^2+26 p^4) E'(p)] \quad \text{V. T. 209, N. 2.}$$

$$15) \int \operatorname{Arccos} x \cdot x' dx \sqrt{1-p^2 + p^2 x^2} = \frac{1}{11025 p^5} [-420 \pi \sqrt{1-p^2} + (62-13 p^2-409 p^4)$$

$$(1-p^2) F'(p) + 2(389-1343 p^2+1723 p^4-409 p^6) E'(p)] \quad \text{V. T. 209, N. 3.}$$

$$16) \int \operatorname{Arccos} x \cdot x' dx \sqrt{1-p^2 + p^2 x^2} = \frac{1}{99225 p^5} [2520 \pi \sqrt{1-p^2} - (652-1815 p^2+774 p^4+$$

$$+2629 p^6)(1-p^2) F'(p) - (4388-19279 p^2+33012 p^4-27859 p^6+5258 p^8) E'(p)]$$

$$\text{V. T. 209, N. 4.}$$

$$1) \int \operatorname{Arcsin} x \frac{x dx}{\sqrt{1-p^2 x^2}} = \frac{1}{p^2} \left[-\frac{\pi}{2} \sqrt{1-p^2} + E'(p) \right] \quad \text{V. T. 211, N. 1.}$$

$$2) \int \operatorname{Arcsin} x \frac{x^3 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{9 p^4} \left[-3(2+p^2) \frac{\pi}{2} \sqrt{1-p^2} + (1-p^2) F'(p) + (5+2 p^2) E'(p) \right]$$

$$\text{V. T. 211, N. 5.}$$

$$3) \int \operatorname{Arcsin} x \frac{x^5 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{225 p^6} \left[-15(8+4 p^2+3 p^4) \frac{\pi}{2} \sqrt{1-p^2} + 2(13+6 p^2)(1-p^2) \right.$$

$$\left. F'(p) + (94+31 p^2+24 p^4) E'(p) \right] \quad \text{V. T. 211, N. 8.}$$

$$4) \int \operatorname{Arcsin} x \frac{x^7 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{3675 p^8} \left[-105(16+8 p^2+6 p^4+5 p^6) \frac{\pi}{2} \sqrt{1-p^2} + (404+233 p^2+$$

$$+120 p^4)(1-p^2) F'(p) + (1276+389 p^2+256 p^4+240 p^6) E'(p) \right] \quad \text{V. T. 211, N. 10.}$$

- 5) $\int \text{Arcsin } x \frac{dx}{\sqrt{1-p^2x^2}} = \frac{\pi}{2\sqrt{1-p^2}} - \frac{1}{2p} \log \frac{1+p}{1-p}$ V. T. 211, N. 26.
- 6) $\int \text{Arcsin } x \frac{x dx}{\sqrt{1-p^2x^2}} = \frac{1}{p^2} \left[\frac{\pi}{2\sqrt{1-p^2}} - F'(p) \right]$ V. T. 211, N. 14.
- 7) $\int \text{Arcsin } x \frac{x^2 dx}{\sqrt{1-p^2x^2}} = \frac{1}{p^4} \left[(2-p^2) \frac{\pi}{2\sqrt{1-p^2}} - F'(p) - E'(p) \right]$ V. T. 211, N. 18.
- 8) $\int \text{Arcsin } x \frac{x^3 dx}{\sqrt{1-p^2x^2}} = \frac{1}{9p^6} \left[3(8-4p^2-p^4) \frac{\pi}{2\sqrt{1-p^2}} - (10-p^2)F'(p) - 2(7+p^2)E'(p) \right]$
V. T. 211, N. 21.
- 9) $\int \text{Arcsin } x \frac{x^4 dx}{\sqrt{1-p^2x^2}} = \frac{1}{75p^8} \left[15(16-8p^2-2p^4-p^6) \frac{\pi}{2\sqrt{1-p^2}} - (92-13p^2-4p^4)F'(p) - \right.$
 $\left. - (148+27p^2+8p^4)E'(p) \right]$ V. T. 211, N. 23.
- 10) $\int \text{Arcsin } x \frac{dx}{\sqrt{1-p^2x^2}} = \frac{1}{3(1-p^2)} \left[(3-2p^2) \frac{\pi}{2\sqrt{1-p^2}} - 1 - \frac{1-p^2}{p} \log \frac{1+p}{1-p} \right]$
V. T. 212, N. 17.
- 11) $\int \text{Arcsin } x \frac{x dx}{\sqrt{1-p^2x^2}} = \frac{1}{3p^2(1-p^2)} \left[\frac{\pi}{2\sqrt{1-p^2}} - E'(p) \right]$ V. T. 212, N. 2.
- 12) $\int \text{Arcsin } x \frac{x^2 dx}{\sqrt{1-p^2x^2}} = \frac{1}{6p^3(1-p^2)} \left[\frac{p^2\pi}{\sqrt{1-p^2}} - 2 + \frac{1-p^2}{p} \log \frac{1+p}{1-p} \right]$ V. T. 212, N. 7.
- 13) $\int \text{Arcsin } x \frac{x^3 dx}{\sqrt{1-p^2x^2}} = \frac{1}{3p^4(1-p^2)} \left[-(2-3p^2) \frac{\pi}{2\sqrt{1-p^2}} + 3(1-p^2)F'(p) - E'(p) \right]$
V. T. 212, N. 9.
- 14) $\int \text{Arcsin } x \frac{x^4 dx}{\sqrt{1-p^2x^2}} = \frac{1}{3p^5(1-p^2)} \left[-(8-12p^2+3p^4) \frac{\pi}{2\sqrt{1-p^2}} + 6(1-p^2)F'(p) + \right.$
 $\left. + (2-3p^2)E'(p) \right]$ V. T. 212, N. 12.
- 15) $\int \text{Arcsin } x \frac{x^5 dx}{\sqrt{1-p^2x^2}} = \frac{1}{9p^6(1-p^2)} \left[-3(16-24p^2+6p^4+p^6) \frac{\pi}{2\sqrt{1-p^2}} + \right.$
 $\left. + (28-p^2)(1-p^2)F'(p) + (20-21p^2-2p^4)E'(p) \right]$ V. T. 212, N. 14.
- 16) $\int \text{Arcsin } x \cdot x dx \sqrt{\frac{1-x^2}{(1-p^2x^2)^2}} = \frac{1}{3p^2(1-p^2)} \left[-\sqrt{1-p^2} + \frac{1}{p} \text{Arcsin } p \right]$ V. T. 212, N. 3.

$$17) \int \text{Arcsin } x \frac{dx}{\sqrt{1-p^2 x^2}} = \frac{1}{15(1-p^2)^2} \left[(15-20p^2+8p^4) \frac{\pi}{2\sqrt{1-p^2}} - (7-5p^2) - 4 \frac{(1-p^2)^2}{p} \log \frac{1+p}{1-p} \right] \text{ V. T. 213, N. 20.}$$

$$18) \int \text{Arcsin } x \frac{x dx}{\sqrt{1-p^2 x^2}} = \frac{1}{15p^2(1-p^2)^2} \left[\frac{3\pi}{2\sqrt{1-p^2}} + (1-p^2)F'(p) - 2(2-p^2)E'(p) \right] \text{ V. T. 213, N. 2.}$$

$$19) \int \text{Arcsin } x \frac{x^2 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{15p^2(1-p^2)^2} \left[(5-2p^2) \frac{p^2 \pi}{2\sqrt{1-p^2}} - 2 + \frac{(1-p^2)^2}{p} \log \frac{1+p}{1-p} \right] \text{ V. T. 213, N. 8.}$$

$$20) \int \text{Arcsin } x \frac{x^3 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{15p^4(1-p^2)^2} \left[-(2-5p^2) \frac{\pi}{2\sqrt{1-p^2}} + (1-p^2)F'(p) + (1-3p^2)E'(p) \right] \text{ V. T. 213, N. 11.}$$

$$21) \int \text{Arcsin } x \frac{x^4 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{30p^4(1-p^2)^2} \left[\frac{3p^4 \pi}{\sqrt{1-p^2}} + 2(3-5p^2) - 3 \frac{(1-p^2)^2}{p} \log \frac{1+p}{1-p} \right] \text{ V. T. 213, N. 15.}$$

$$22) \int \text{Arcsin } x \frac{x^5 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{15p^6(1-p^2)^2} \left[(8-20p^2+15p^4) \frac{\pi}{2\sqrt{1-p^2}} - (14-15p^2) (1-p^2)F'(p) + 2(3-4p^2)E'(p) \right] \text{ V. T. 213, N. 17.}$$

$$23) \int \text{Arcsin } x \frac{x^7 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{15p^8(1-p^2)^2} \left[3(16-40p^2+30p^4-5p^6) \frac{\pi}{2\sqrt{1-p^2}} - (44-45p^2)(1-p^2)F'(p) - (4-17p^2+15p^4)E'(p) \right] \text{ V. T. 213, N. 19.}$$

$$24) \int \text{Arcsin } x \cdot x dx \sqrt{\frac{1-x^2}{(1-p^2 x^2)^7}} = \frac{1}{15p^4(1-p^2)^2} \left[(1-2p^2) \sqrt{1-p^2} - \frac{1-3p^2}{p} \text{Arcsin } p \right] \text{ V. T. 213, N. 3.}$$

$$25) \int \text{Arcsin } x \cdot x^3 dx \sqrt{\frac{1-x^2}{(1-p^2 x^2)^7}} = \frac{1}{30p^6(1-p^2)^2} \left[-(3-11p^2) \sqrt{1-p^2} + (3-5p^2) (1-3p^2) \frac{1}{p} \text{Arcsin } p \right] \text{ V. T. 213, N. 12.}$$

$$26) \int \text{Arcsin } x \cdot x dx \sqrt{\frac{(1-x^2)^3}{(1-p^2 x^2)^7}} = \frac{1}{30p^6(1-p^2)} \left[(3-9p^2-4p^4) \sqrt{1-p^2} - \frac{3}{p} (1-3p^2) \text{Arcsin } p \right] \text{ V. T. 213, N. 5.}$$

$$1) \int \text{Arcsin } x \frac{x dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{p^2} \left[\frac{\pi}{2} - E'(p) \right] \text{ V. T. 214, N. 1.}$$

$$2) \int \text{Arcsin } x \frac{x^3 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{9p^4} \left[-3(2-3p^2) \frac{\pi}{2} + (1-p^2) F'(p) + (5-7p^2) E'(p) \right] \\ \text{V. T. 214, N. 5.}$$

$$3) \int \text{Arcsin } x \frac{x^5 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{225p^6} \left[15(8-20p^2+15p^4) \frac{\pi}{2} - 2(13-19p^2)(1-p^2) F'(p) - \right. \\ \left. - (94-219p^2+149p^4) E'(p) \right] \text{ V. T. 214, N. 8.}$$

$$4) \int \text{Arcsin } x \frac{x^7 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{3675p^8} \left[-105(16-56p^2+70p^4-35p^6) \frac{\pi}{2} + \right. \\ \left. + (404-1041p^2+757p^4)(1-p^2) F'(p) + (1276-4217p^2+4862p^4-2161p^6) E'(p) \right] \\ \text{V. T. 214, N. 10.}$$

$$5) \int \text{Arcsin } x \frac{x dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{p^2} \left[-\frac{\pi}{2} + F'(p) \right] \text{ (VIII, 593).}$$

$$6) \int \text{Arcsin } x \frac{x^3 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{p^4} \left[(2-p^2) \frac{\pi}{2} - (1-p^2) F'(p) - E'(p) \right] \text{ V. T. 214, N. 18.}$$

$$7) \int \text{Arcsin } x \frac{x^5 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{9p^6} \left[-3(8-12p^2+3p^4) \frac{\pi}{2} + (10-9p^2)(1-p^2) F'(p) + \right. \\ \left. + 2(7-8p^2) E'(p) \right] \text{ V. T. 214, N. 21.}$$

$$8) \int \text{Arcsin } x \frac{x^7 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{75p^8} \left[15(16-40p^2+30p^4-5p^6) \frac{\pi}{2} - (92-171p^2+75p^4) \right. \\ \left. (1-p^2) F'(p) - (148-323p^2+183p^4) E'(p) \right] \text{ V. T. 214, N. 23.}$$

$$9) \int \text{Arcsin } x \frac{dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{3(1-p^2)^2} \left[\frac{\pi}{2} (3-p^2) - \sqrt{1-p^2} - \frac{2}{p} \text{Arcsin } p \right] \\ \text{V. T. 215, N. 17.}$$

$$10) \int \text{Arcsin } x \frac{x dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{3p^2(1-p^2)} \left[-(1-p^2) \frac{\pi}{2} + E'(p) \right] \text{ V. T. 215, N. 2.}$$

$$11) \int \text{Arcsin } x \frac{x^3 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{3p^4(1-p^2)} \left[\frac{1}{2} p^2 \pi + \sqrt{1-p^2} - \frac{1}{p} \text{Arcsin } p \right] \\ \text{V. T. 215, N. 7.}$$

$$12) \int \operatorname{Arcsin} x \frac{x^3 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{3p^4} \left[-(2+p^2) \frac{\pi}{2} + 3F'(p) - E'(p) \right] \text{ V. T. 215, N. 9.}$$

$$13) \int \operatorname{Arcsin} x \frac{x^5 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{3p^6} \left[(8-4p^2-p^4) \frac{\pi}{2} - 6(1-p^2)F'(p) - (2+p^2)E'(p) \right] \\ \text{V. T. 215, N. 12.}$$

$$14) \int \operatorname{Arcsin} x \frac{x^7 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{9p^8} \left[-3(16-24p^2+6p^4+p^6) \frac{\pi}{2} + (28-27p^2) \right. \\ \left. (1-p^2)F'(p) + (20-19p^2-3p^4)E'(p) \right] \text{ V. T. 215, N. 14.}$$

$$15) \int \operatorname{Arcsin} x \cdot x dx \sqrt{\frac{1-x^2}{(1-p^2+p^2x^2)^2}} = \frac{1}{6p^2} \left[\frac{2}{1-p^2} - \frac{1}{p} \frac{1+p}{1-p} \right] \text{ V. T. 215, N. 3.}$$

$$16) \int \operatorname{Arcsin} x \frac{dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{15p^2(1-p^2)^2} \left[p^2(7-6p^2+3p^4) \frac{\pi}{2} - (4+3p^2-2p^4) \right. \\ \left. \sqrt{1-p^2} + 4 \frac{1-3p^2}{p} \operatorname{Arcsin} p \right] \text{ V. T. 216, N. 20.}$$

$$17) \int \operatorname{Arcsin} x \frac{x dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{15p^2(1-p^2)^2} \left[3(1-p^2)^2 \frac{\pi}{2} - (1-p^2)F'(p) + \right. \\ \left. + 2(2-p^2)E'(p) \right] \text{ V. T. 216, N. 2.}$$

$$18) \int \operatorname{Arcsin} x \frac{x^3 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{15p^4(1-p^2)^2} \left[-p^2(2-6p^2+3p^4) \frac{\pi}{2} - (1-2p^2) \right. \\ \left. \sqrt{1-p^2} + \frac{1-3p^2}{p} \operatorname{Arcsin} p \right] \text{ V. T. 216, N. 8.}$$

$$19) \int \operatorname{Arcsin} x \frac{x^5 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{15p^4(1-p^2)^2} \left[-(2+3p^2)(1-p^2) \frac{\pi}{2} + (1-p^2)F'(p) + \right. \\ \left. + (1+2p^2)E'(p) \right] \text{ V. T. 216, N. 11.}$$

$$20) \int \operatorname{Arcsin} x \frac{x^7 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{30p^6(1-p^2)^2} \left[-3p^2(7-11p^2+3p^4) \frac{\pi}{2} - (3-9p^2-4p^4) \right. \\ \left. \sqrt{1-p^2} + 3(1-2p^2) \frac{1}{p} \operatorname{Arcsin} p \right] \text{ V. T. 216, N. 15.}$$

$$21) \int \operatorname{Arcsin} x \frac{x^9 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{15p^6} \left[-(8+4p^2+3p^4) \frac{\pi}{2} + (14+p^2)F'(p) - \right. \\ \left. - 2(3+p^2)E'(p) \right] \text{ V. T. 216, N. 17.}$$

$$22) \int \text{Arcsin } x \frac{x^7 dx}{\sqrt{1-p^2+p^2x^2}^7} = \frac{1}{15p^5} \left[3(16-8p^2-2p^4-p^6) \frac{\pi}{2} - (44+p^2)(1-p^2)F(p) - (4+9p^2+2p^4)E(p) \right] \text{ V. T. 216, N. 19.}$$

$$23) \int \text{Arcsin } x \cdot x dx \sqrt{\frac{1-x^2}{(1-p^2+p^2x^2)^7}} = \frac{1}{15p^5} \left[\frac{2}{(1-p^2)^2} - \frac{1}{p} \log \frac{1+p}{1-p} \right] \text{ V. T. 216, N. 3.}$$

$$24) \int \text{Arcsin } x \cdot x^2 dx \sqrt{\frac{1-x^2}{(1-p^2+p^2x^2)^7}} = \frac{1}{30p^6} \left[\frac{6}{1-p^2} - \frac{3+2p^2}{p} \log \frac{1+p}{1-p} \right] \text{ V. T. 216, N. 12.}$$

$$25) \int \text{Arcsin } x \cdot x dx \sqrt{\frac{(1-x^2)^2}{(1-p^2+p^2x^2)^7}} = \frac{1}{30p^4} \left[-2 \frac{3-5p^2}{(1-p^2)^2} + \frac{3}{p} \log \frac{1+p}{1-p} \right] \text{ V. T. 216, N. 5.}$$

$$1) \int \text{Arcsin } px \frac{x dx}{\sqrt{(1-x^2)(1-p^2x^2)}} = -\frac{\pi}{4p} \log(1-p^2) \text{ Bronwin, Math. 2, 297.}$$

$$2) \int \text{Arcsin } x \frac{x dx}{\sqrt{(1-x^2)(1-p^2x^2)^2}} = \frac{1}{p(1-p^2)} \text{Arcsin } p \text{ V. T. 211, N. 13.}$$

$$3) \int \text{Arcsin } x \frac{x dx}{\sqrt{(1-x^2)(1-p^2x^2)^2}} = \frac{1}{3(1-p^2)^2} \left[\sqrt{1-p^2} + \frac{2}{p} \text{Arcsin } p \right] \text{ V. T. 212, N. 1.}$$

$$4) \int \text{Arcsin } x \frac{x^3 dx}{\sqrt{(1-x^2)(1-p^2x^2)^2}} = \frac{1}{3p^2(1-p^2)^2} \left[\sqrt{1-p^2} - \frac{1-3p^2}{p} \text{Arcsin } p \right] \text{ V. T. 212, N. 8.}$$

$$5) \int \text{Arcsin } x \frac{x dx}{\sqrt{(1-x^2)(1-p^2x^2)^7}} = \frac{1}{15p^3(1-p^2)^2} \left[(4+3p^2-2p^4)\sqrt{1-p^2} - 4 \frac{1-3p^2}{p} \text{Arcsin } p \right] \text{ V. T. 213, N. 1.}$$

$$6) \int \text{Arcsin } x \frac{x^3 dx}{\sqrt{(1-x^2)(1-p^2x^2)^7}} = \frac{1}{15p^4(1-p^2)^2} \left[-(1-8p^2+2p^4)\sqrt{1-p^2} + (1-5p^2)(1-3p^2) \frac{1}{p} \text{Arcsin } p \right] \text{ V. T. 213, N. 10.}$$

$$7) \int \text{Arcsin } x \frac{x^5 dx}{\sqrt{(1-x^2)(1-p^2x^2)^7}} = \frac{1}{30p^6(1-p^2)^2} \left[(3-19p^2+41p^4-15p^6)\sqrt{1-p^2} + (3-10p^2+15p^4)(1-3p^2) \frac{1}{p} \text{Arcsin } p \right] \text{ V. T. 213, N. 16.}$$

- 8) $\int \text{Arcsin } x \frac{x dx}{\sqrt{(1-x^2)(1-p^2+p^2x^2)^3}} = \frac{1}{2p} \iota \frac{1+p}{1-p}$ V. T. 214, N. 13.
- 9) $\int \text{Arcsin } x \frac{x dx}{\sqrt{(1-x^2)(1-p^2+p^2x^2)^5}} = \frac{1}{3} \left[\frac{1}{1-p^2} + \frac{1}{p} \iota \frac{1+p}{1-p} \right]$ V. T. 215, N. 1.
- 10) $\int \text{Arcsin } x \frac{x^3 dx}{\sqrt{(1-x^2)(1-p^2+p^2x^2)^5}} = \frac{1}{6p^3} \left[-2 + \frac{1+2p^2}{p} \iota \frac{1+p}{1-p} \right]$ V. T. 215, N. 8.
- 11) $\int \text{Arcsin } x \frac{x dx}{\sqrt{(1-x^2)(1-p^2+p^2x^2)^7}} = \frac{1}{15} \left[\frac{7-5p^2}{(1-p^2)^2} + \frac{4}{p} \iota \frac{1+p}{1-p} \right]$ V. T. 216, N. 1.
- 12) $\int \text{Arcsin } x \frac{x^3 dx}{\sqrt{(1-x^2)(1-p^2+p^2x^2)^7}} = \frac{1}{15p^2} \left[-\frac{2-5p^2}{1-p^2} + \frac{1+4p^2}{p} \iota \frac{1+p}{1-p} \right]$
V. T. 216, N. 10.
- 13) $\int \text{Arcsin } x \frac{x^5 dx}{\sqrt{(1-x^2)(1-p^2+p^2x^2)^7}} = \frac{1}{30p^4} \left[-2(3+5p^2) + (3+4p^2+8p^4) \frac{1}{p} \iota \frac{1+p}{1-p} \right]$
V. T. 216, N. 16.

- 1) $\int \text{Arccos } x \frac{x dx}{\sqrt{1-p^2x^2}} = \frac{1}{p} \left[\frac{\pi}{2} - E'(p) \right]$ V. T. 214, N. 1.
- 2) $\int \text{Arccos } x \frac{x^3 dx}{\sqrt{1-p^2x^2}} = \frac{1}{9p^4} [3\pi - (1-p^2)F'(p) - (5+2p^2)E'(p)]$ V. T. 214, N. 2.
- 3) $\int \text{Arccos } x \frac{x^5 dx}{\sqrt{1-p^2x^2}} = \frac{1}{225p^6} [60\pi - 2(13+6p^2)(1-p^2)F'(p) - (94+31p^2+24p^4)E'(p)]$
V. T. 214, N. 3.
- 4) $\int \text{Arccos } x \frac{x^7 dx}{\sqrt{1-p^2x^2}} = \frac{1}{3675p^8} [840\pi - (414+233p^2+120p^4)(1-p^2)F'(p) -$
 $-(1276+389p^2+256p^4+240p^6)E'(p)]$ V. T. 214, N. 4.
- 5) $\int \text{Arccos } x \frac{dx}{\sqrt{1-p^2x^2}} = \frac{1}{2p} \iota \frac{1+p}{1-p}$ V. T. 214, N. 13.
- 6) $\int \text{Arccos } x \frac{x dx}{\sqrt{1-p^2x^2}} = \frac{1}{p^2} \left[-\frac{\pi}{2} + F'(p) \right]$ V. T. 214, N. 14.
- 7) $\int \text{Arccos } x \frac{x^3 dx}{\sqrt{1-p^2x^2}} = \frac{1}{p^4} [-\pi + F'(p) + E'(p)]$ V. T. 214, N. 15.

$$8) \int \text{Arccos } x \frac{x^5 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{9p^6} [-12\pi - (10-p^2)F'(p) + 2(7+p^2)E'(p)] \text{ V. T. 214, N. 16.}$$

$$9) \int \text{Arccos } x \frac{x^7 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{75p^8} [-120\pi + (92-13p^2-4p^4)F'(p) + (148+27p^2+8p^4)E'(p)] \\ \text{V. T. 214, N. 17.}$$

$$10) \int \text{Arccos } x \frac{dx}{\sqrt{1-p^2 x^2}} = \frac{1}{3} \left[\frac{1}{1-p^2} + \frac{1}{p} \log \frac{1+p}{1-p} \right] \text{ V. T. 215, N. 1.}$$

$$11) \int \text{Arccos } x \frac{x dx}{\sqrt{1-p^2 x^2}} = \frac{1}{3p^2(1-p^2)} \left[-(1-p^2)\frac{\pi}{2} + E'(p) \right] \text{ V. T. 215, N. 2.}$$

$$12) \int \text{Arccos } x \frac{x^3 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{6p^2} \left[\frac{2}{1-p^2} - \frac{1}{p} \log \frac{1+p}{1-p} \right] \text{ V. T. 215, N. 3.}$$

$$13) \int \text{Arccos } x \frac{x^5 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{3p^4(1-p^2)} [(1-p^2)\pi - 3(1-p^2)F'(p) + E'(p)] \text{ V. T. 215, N. 4.}$$

$$14) \int \text{Arccos } x \frac{x^7 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{3p^6(1-p^2)} [4(1-p^2)\pi - 6(1-p^2)F'(p) - (2-3p^2)E'(p)] \\ \text{V. T. 215, N. 5.}$$

$$15) \int \text{Arccos } x \frac{x^9 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{9p^8(1-p^2)} [24(1-p^2)\pi - (28-p^2)(1-p^2)F'(p) - \\ -(20-21p^2-2p^4)E'(p)] \text{ V. T. 215, N. 6.}$$

$$16) \int \text{Arccos } x \cdot x dx \sqrt{\frac{1-x^2}{(1-p^2 x^2)^5}} = \frac{1}{3p^2(1-p^2)} \left[\frac{1}{2}p^2\pi + \sqrt{1-p^2} - \frac{1}{p} \text{Arcsin } p \right] \\ \text{V. T. 215, N. 7.}$$

$$17) \int \text{Arccos } x \frac{dx}{\sqrt{1-p^2 x^2}} = \frac{1}{15} \left[\frac{7-5p^2}{(1-p^2)^2} + \frac{4}{p} \log \frac{1+p}{1-p} \right] \text{ V. T. 216, N. 1.}$$

$$18) \int \text{Arccos } x \frac{x dx}{\sqrt{1-p^2 x^2}} = \frac{1}{15p^2(1-p^2)^2} \left[3(1-p^2)^2 \frac{\pi}{2} - (1-p^2)F'(p) + 2(2-p^2)E'(p) \right] \\ \text{V. T. 216, N. 2.}$$

$$19) \int \text{Arccos } x \frac{x^3 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{15p^2} \left[\frac{2}{(1-p^2)^2} - \frac{1}{p} \log \frac{1+p}{1-p} \right] \text{ V. T. 216, N. 3.}$$

$$20) \int \text{Arccos } x \frac{x^5 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{15p^4(1-p^2)^2} [(1-p^2)^2\pi - (1-p^2)F'(p) - (1-3p^2)E'(p)] \\ \text{V. T. 216, N. 4.}$$

$$21) \int \text{Arccos } x \frac{x^7 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{30p^4} \left[-2 \frac{3-5p^2}{(1-p^2)^2} + \frac{3}{p} \log \frac{1+p}{1-p} \right] \text{ V. T. 216, N. 5.}$$

$$22) \int \text{Arccos } x \frac{x^2 dx}{\sqrt{1-p^2x^2}} = \frac{1}{15p^6(1-p^2)^2} [-4(1-p^2)^2\pi + (14-15p^2)(1-p^2)F'(p) - 2(3-4p^2)E'(p)] \text{ V. T. 216, N. 6.}$$

$$23) \int \text{Arccos } x \frac{x^3 dx}{\sqrt{1-p^2x^2}} = \frac{1}{15p^8(1-p^2)^2} [-24(1-p^2)^2\pi + (44-45p^2)(1-p^2)F'(p) + (4-17p^2+15p^4)E'(p)] \text{ V. T. 216, N. 7.}$$

$$24) \int \text{Arccos } x \cdot x dx \sqrt{\frac{1-x^2}{(1-p^2x^2)^7}} = \frac{1}{15p^4(1-p^2)^2} \left[-p^2(2-6p^2+3p^4)\frac{\pi}{2} - (1-2p^2)\sqrt{1-p^2} + \frac{1-3p^2}{p} \text{Arcsin } p \right] \text{ V. T. 216, N. 8.}$$

$$25) \int \text{Arccos } x \cdot x^2 dx \sqrt{\frac{1-x^2}{(1-p^2x^2)^7}} = \frac{1}{30p^6(1-p^2)^2} \left[p^2(21-58p^2+54p^4-15p^6)\frac{\pi}{2} + (3-11p^2)\sqrt{1-p^2} - (3-5p^2)(1-3p^2)\frac{1}{p} \text{Arcsin } p \right] \text{ V. T. 216, N. 9.}$$

$$26) \int \text{Arccos } x \cdot x dx \sqrt{\frac{(1-x^2)^2}{(1-p^2x^2)^7}} = \frac{1}{30p^6(1-p^2)} \left[-3p^2(7-11p^2+3p^4)\frac{\pi}{2} - (3-9p^2-4p^4)\sqrt{1-p^2} + \frac{3}{p}(1-3p^2)\text{Arcsin } p \right] \text{ V. T. 216, N. 15.}$$

$$1) \int \text{Arccos } x \frac{x dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{p^2} \left[-\frac{\pi}{2}\sqrt{1-p^2} + E'(p) \right] \text{ V. T. 211, N. 1.}$$

$$2) \int \text{Arccos } x \frac{x^2 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{9p^4} \left[3\pi\sqrt{1-p^2} - (1-p^2)F'(p) - (5-7p^2)E'(p) \right] \text{ V. T. 211, N. 2.}$$

$$3) \int \text{Arccos } x \frac{x^3 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{225p^6} [-60\pi\sqrt{1-p^2} + 2(13-19p^2)(1-p^2)F'(p) + (94-219p^2+149p^4)E'(p)] \text{ V. T. 211, N. 3.}$$

$$4) \int \text{Arccos } x \frac{x^4 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{3675p^8} [840\pi\sqrt{1-p^2} - (404-1041p^2+757p^4)(1-p^2)F'(p) - (1276-4217p^2+4862p^4-2161p^6)E'(p)] \text{ V. T. 211, N. 4.}$$

- 5) $\int \text{Arccos } x \frac{dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{p(1-p^2)} \text{Arcsin } p$ V. T. 211, N. 13.
- 6) $\int \text{Arccos } x \frac{x dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{p^2} \left\{ -\frac{\pi}{2\sqrt{1-p^2}} + F'(p) \right\}$ (VIII, 593).
- 7) $\int \text{Arccos } x \frac{x^2 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{p^3} [-\pi\sqrt{1-p^2} + (1-p^2)F'(p) + E'(p)]$ V. T. 211, N. 15.
- 8) $\int \text{Arccos } x \frac{x^3 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{9p^5} [12\pi\sqrt{1-p^2} - (10-9p^2)(1-p^2)F'(p) - 2(7-8p^2)E'(p)]$ V. T. 211, N. 16.
- 9) $\int \text{Arccos } x \frac{x^4 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{75p^5} [-120\pi\sqrt{1-p^2} + (92-171p^2+75p^4)(1-p^2)F'(p) + (148-323p^2+183p^4)E'(p)]$ V. T. 211, N. 17.
- 10) $\int \text{Arccos } x \frac{dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{3(1-p^2)^{3/2}} \left[\sqrt{1-p^2} + \frac{2}{p} \text{Arcsin } p \right]$ V. T. 212, N. 1.
- 11) $\int \text{Arccos } x \frac{x dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{3p^2(1-p^2)^{3/2}} \left[\frac{\pi}{2\sqrt{1-p^2}} - E'(p) \right]$ V. T. 212, N. 2.
- 12) $\int \text{Arccos } x \frac{x^2 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{3p^2(1-p^2)^{3/2}} \left[-\sqrt{1-p^2} + \frac{1}{p} \text{Arcsin } p \right]$ V. T. 212, N. 3.
- 13) $\int \text{Arccos } x \frac{x^3 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{3p^4} \left[\frac{\pi}{\sqrt{1-p^2}} - 3F'(p) + E'(p) \right]$ V. T. 212, N. 4.
- 14) $\int \text{Arccos } x \frac{x^4 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{3p^6} [-4\pi\sqrt{1-p^2} + 6(1-p^2)F'(p) + (2+p^2)E'(p)]$
V. T. 212, N. 5.
- 15) $\int \text{Arccos } x \frac{x^5 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{9p^6} [24\pi\sqrt{1-p^2} - (28-27p^2)(1-p^2)F'(p) - (20-19p^2-3p^4)E'(p)]$ V. T. 212, N. 6.
- 16) $\int \text{Arccos } x \cdot x dx \sqrt{\frac{1-x^2}{(1-p^2+p^2x^2)^3}} = \frac{1}{6p^3(1-p^2)^{3/2}} \left[\frac{p^2\pi}{\sqrt{1-p^2}} - 2 + \frac{1-p^2}{p} \ln \frac{1+p}{1-p} \right]$
V. T. 212, N. 7.
- 17) $\int \text{Arccos } x \frac{dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{15p^3(1-p^2)^{3/2}} \left[(4+3p^2-2p^4)\sqrt{1-p^2} - 4\frac{1-3p^2}{p} \text{Arcsin } p \right]$ V. T. 213, N. 1.

$$18) \int \text{Arccos } x \frac{x dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{15p^3(1-p^2)^2} \left[\frac{3\pi}{2\sqrt{1-p^2}} + (1-p^2)F'(p) - 2(2-p^2)E'(p) \right]$$

V. T. 213, N. 2.

$$19) \int \text{Arccos } x \frac{x^3 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{15p^4(1-p^2)^2} \left[(1-2p^2)\sqrt{1-p^2} - \frac{1-3p^2}{p} \text{Arcsin } p \right]$$

V. T. 213, N. 3.

$$20) \int \text{Arccos } x \frac{x^5 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{15p^4(1-p^2)} \left[\frac{\pi}{\sqrt{1-p^2}} - (1-p^2)F'(p) - (1+2p^2)E'(p) \right]$$

V. T. 213, N. 4.

$$21) \int \text{Arccos } x \frac{x^7 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{30p^6(1-p^2)} \left[(3-9p^2-4p^4)\sqrt{1-p^2} - \frac{3}{p}(1-3p^2)\text{Arcsin } p \right]$$

V. T. 213, N. 5.

$$22) \int \text{Arccos } x \frac{x^9 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{15p^6} \left[\frac{4\pi}{\sqrt{1-p^2}} - (14+p^2)F'(p) + 2(3+p^2)E'(p) \right]$$

V. T. 213, N. 6.

$$23) \int \text{Arccos } x \frac{x^7 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{15p^8} \left[-24\pi\sqrt{1-p^2} + (44+p^2)(1-p^2)F'(p) + \right. \\ \left. + (4+9p^2+2p^4)E'(p) \right] \text{ V. T. 213, N. 7.}$$

$$24) \int \text{Arccos } x \cdot x dx \sqrt{\frac{1-x^2}{(1-p^2+p^2x^2)}} = \frac{1}{15p^3(1-p^2)^2} \left[2(5-2p^2)\frac{p^2\pi}{\sqrt{1-p^2}} - \right. \\ \left. - 2 + \frac{(1-p^2)^2}{p} \log \frac{1+p}{1-p} \right] \text{ V. T. 213, N. 8.}$$

$$25) \int \text{Arccos } x \cdot x^3 dx \sqrt{\frac{1-x^2}{(1-p^2+p^2x^2)}} = \frac{1}{30p^4(1-p^2)} \left[2\frac{p^4\pi}{\sqrt{1-p^2}} - 6 + (3+2p^2) \right. \\ \left. \frac{1-p^2}{p} \log \frac{1+p}{1-p} \right] \text{ V. T. 213, N. 9.}$$

$$26) \int \text{Arccos } x \cdot x dx \sqrt{\frac{(1-x^2)^3}{(1-p^2+p^2x^2)}} = \frac{1}{30p^4(1-p^2)^2} \left[\frac{3p^4\pi}{\sqrt{1-p^2}} + 2(3-5p^2) - \right. \\ \left. - 3\frac{(1-p^2)^2}{p} \log \frac{1+p}{1-p} \right] \text{ V. T. 213, N. 15.}$$

$$1) \int \text{Arccos } px \frac{x dx}{\sqrt{(1-x^2)(1-p^2 x^2)}} = \frac{\pi}{2p} l(1+p) \text{ V. T. 12, N. 8 et T. 239, N. 1.}$$

$$2) \int \text{Arccos } x \frac{x dx}{\sqrt{(1-x^2)(1-p^2 x^2)^3}} = \frac{1}{1-p^2} \left[\frac{\pi}{2} - \frac{1}{p} \text{Arcsin } p \right] \text{ V. T. 214, N. 26.}$$

$$3) \int \text{Arccos } x \frac{x dx}{\sqrt{(1-x^2)(1-p^2 x^2)^5}} = \frac{1}{3(1-p^2)^2} \left[(3-p^2) \frac{\pi}{2} - \sqrt{1-p^2} - \frac{2}{p} \text{Arcsin } p \right] \\ \text{V. T. 215, N. 17.}$$

$$4) \int \text{Arccos } x \frac{x^3 dx}{\sqrt{(1-x^2)(1-p^2 x^2)^5}} = \frac{1}{3p^3(1-p^2)^2} \left[p^2 \pi - \sqrt{1-p^2} + \frac{1-3p^2}{p} \text{Arcsin } p \right] \\ \text{V. T. 215, N. 18.}$$

$$5) \int \text{Arccos } x \frac{x dx}{\sqrt{(1-x^2)(1-p^2 x^2)^7}} = \frac{1}{15p^3(1-p^2)^3} \left[p^3(7-6p^2+3p^4) \frac{\pi}{2} - (4+3p^2-2p^4) \sqrt{1-p^2} + 4 \frac{1-3p^2}{p} \text{Arcsin } p \right] \\ \text{V. T. 216, N. 20.}$$

$$6) \int \text{Arccos } x \frac{x^3 dx}{\sqrt{(1-x^2)(1-p^2 x^2)^7}} = \frac{1}{15p^4(1-p^2)^3} \left[p^3(2-p^2+3p^4) \frac{\pi}{2} + (1-8p^2+2p^4) \sqrt{1-p^2} - (1-5p^4)(1-3p^2) \frac{1}{p} \text{Arcsin } p \right] \\ \text{V. T. 216, N. 21.}$$

$$7) \int \text{Arccos } x \frac{x^5 dx}{\sqrt{(1-x^2)(1-p^2 x^2)^7}} = \frac{1}{80p^6(1-p^2)^3} \left[-p^2(21-88p^2+114p^4-83p^6+15p^8) \frac{\pi}{2} - (3-19p^2+41p^4-15p^6) \sqrt{1-p^2} + (3-10p^2+15p^4)(1-3p^2) \frac{1}{p} \text{Arcsin } p \right] \\ \text{V. T. 216, N. 22.}$$

$$8) \int \text{Arccos } x \frac{x dx}{\sqrt{(1-x^2)(1-p^2+p^2 x^2)^3}} = \frac{\pi}{2\sqrt{1-p^2}} - \frac{1}{2p} l \frac{1+p}{1-p} \text{ V. T. 211, N. 26.}$$

$$9) \int \text{Arccos } x \frac{x dx}{\sqrt{(1-x^2)(1-p^2+p^2 x^2)^5}} = \frac{1}{3(1-p^2)} \left[(3-2p^2) \frac{\pi}{2\sqrt{1-p^2}} - 1 - \frac{1-p^2}{p} l \frac{1+p}{1-p} \right] \text{ V. T. 212, N. 17.}$$

$$10) \int \text{Arccos } x \frac{x^3 dx}{\sqrt{(1-x^2)(1-p^2+p^2 x^2)^5}} = \frac{1}{6p^2} \left[\frac{2p^2 \pi}{\sqrt{1-p^2}} + 2 - \frac{1+2p^2}{p} l \frac{1+p}{1-p} \right] \\ \text{V. T. 212, N. 18.}$$

$$11) \int \text{Arccos } x \frac{x dx}{\sqrt{(1-x^2)(1-p^2+p^2x^2)}} = \frac{1}{15(1-p^2)^2} \left[(15-20p^2+8p^4) \frac{\pi}{2\sqrt{1-p^2}} - (7-5p^2) - 4 \frac{(1-p^2)^2}{p} \log \frac{1+p}{1-p} \right] \text{ V. T. 213, N. 20.}$$

$$12) \int \text{Arccos } x \frac{x^2 dx}{\sqrt{(1-x^2)(1-p^2+p^2x^2)}} = \frac{1}{15p^2(1-p^2)} \left[(5-4p^2) \frac{p^2\pi}{\sqrt{1-p^2}} + (2-5p^2) - (1+4p^2) \frac{1-p^2}{p} \log \frac{1+p}{1-p} \right] \text{ V. T. 213, N. 21.}$$

$$13) \int \text{Arccos } x \frac{x^3 dx}{\sqrt{(1-x^2)(1-p^2+p^2x^2)}} = \frac{1}{30p^4} \left[8 \frac{p^4\pi}{\sqrt{1-p^2}} + 2(3+5p^2) - \frac{3+4p^2+8p^4}{p} \log \frac{1+p}{1-p} \right] \text{ V. T. 213, N. 22.}$$

$$1) \int \text{Arcsin } x \frac{dx}{\sqrt{x}} = \frac{3}{2} \left\{ \frac{\pi}{2} - 3\sqrt{3} \cdot \text{E}' \left(\sin \frac{\pi}{12} \right) + \frac{3+3\sqrt{3}}{2\sqrt{3}} \text{F}' \left(\sin \frac{\pi}{12} \right) \right\} \text{ V. T. 8, N. 23.}$$

$$2) \int \text{Arcsin } x \frac{dx}{\sqrt{x^3}} = 3 \left\{ \frac{\pi}{2} + \frac{\sqrt{3}-1}{\sqrt{3}} \text{F}' \left(\cos \frac{\pi}{12} \right) - 2\sqrt{3} \cdot \text{E}' \left(\cos \frac{\pi}{12} \right) \right\} \text{ V. T. 8, N. 22.}$$

$$3) \int \text{Arcsin } x \frac{dx}{x\sqrt{x}} = \sqrt{27} \cdot \text{F}' \left(\cos \frac{\pi}{12} \right) - \frac{3}{2} \pi \text{ V. T. 10, N. 5.}$$

$$4) \int \text{Arcsin } x \frac{dx}{x\sqrt{x^3}} = \frac{3}{2} \sqrt{27} \cdot \text{F}' \left(\sin \frac{\pi}{12} \right) - \frac{3}{4} \pi \text{ V. T. 10, N. 6.}$$

$$5) \int \text{Arcsin } x \frac{dx}{\sqrt{p+qx^3}} = \frac{1}{q\sqrt{p+q}} \left[4 \text{F}' \left(\frac{\pi}{4}, \sqrt{\frac{2q}{p+q}} \right) - \pi \right] \text{ (VIII, 593).}$$

$$6) \int \text{Arcsin } x \frac{dx}{\sqrt{p-qx^3}} = \frac{1}{q} \left[\frac{\pi}{\sqrt{p-q}} - \frac{4}{\sqrt{p+q}} \left\{ \text{F}' \left(\sqrt{\frac{2q}{p+q}} \right) - \text{F}' \left(\frac{\pi}{4}, \sqrt{\frac{2q}{p+q}} \right) \right\} \right] [p > q] \text{ (VIII, 594).}$$

$$7) \int \text{Arcsin } x \frac{x dx}{\sqrt{1+x^4}} = -\frac{\pi}{4} \sqrt{2} + \frac{1}{2} \sqrt{2} \cdot \text{F}' \left(\sin \frac{\pi}{4} \right) \text{ V. T. 9, N. 8.}$$

$$8) \int \text{Arcsin } x \frac{dx}{\sqrt{p^2+x^4}} = \frac{1}{p^2} \left(\frac{1}{2p} \pi - \text{Arccol } p \right) \text{ V. T. 12, N. 6.}$$

- 9) $\int \text{Arcsin } x \frac{x dx}{\sqrt{q^2 - p^2 x^2}} = \frac{\pi}{2 p^2 \sqrt{q^2 - p^2}} - \frac{1}{p^2 q} F' \left(\frac{p}{q} \right)$ V. T. 12, N. 28.
- 10) $\int \text{Arcsin } x \frac{dx}{x \sqrt{1-x^2}} = 2 \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 206, N. 1.
- 11) $\int \text{Arcsin } x \frac{x}{x^2 - \cos^2 \lambda} \frac{dx}{\sqrt{1-x^2}} = 2 \operatorname{Cosec} \lambda \cdot \sum_{n=0}^{\infty} \frac{\sin \{(2n+1)\lambda\}}{(2n+1)^2}$ V. T. 207, N. 1.
- 12) $\int \frac{\text{Arcsin } x \cdot \sqrt{1-x^2} - x}{x^3} \frac{dx}{\sqrt{1-x^2}} = -\frac{1}{4} \pi$ V. T. 206, N. 9.
- 13) $\int (\text{Arcsin } x)^2 \frac{dx}{x^2 \sqrt{1-x^2}} = \pi \log 2$ V. T. 206, N. 5.
- 14) $\int (\text{Arcsin } x)^p \frac{dx}{x \sqrt{1-x^2}} = \left(\frac{\pi}{2} \right)^p \left\{ 1 + \sum_{n=1}^{\infty} \frac{1}{4^{n-1}} \frac{2^{2n-1} - 1}{p+2n} \sum_{m=1}^{\infty} \frac{1}{(2m)^{2n}} \right\}$ V. T. 206, N. 3.

- 1) $\int \text{Arccos } x \frac{dx}{\sqrt{x}} = \frac{3}{2} \left\{ 3 \sqrt{3} \cdot E' \left(\sin \frac{\pi}{12} \right) - \frac{3+3\sqrt{3}}{2\sqrt{3}} F' \left(\sin \frac{\pi}{12} \right) \right\}$ V. T. 8, N. 23.
- 2) $\int \text{Arccos } x \frac{dx}{\sqrt{x^3}} = 3 \left\{ \frac{1-\sqrt{3}}{\sqrt{3}} F' \left(\cos \frac{\pi}{12} \right) + 2\sqrt{3} \cdot E' \left(\cos \frac{\pi}{12} \right) \right\}$ V. T. 8, N. 22.
- 3) $\int \text{Arccos } x \frac{dx}{\sqrt{p+qx^2}} = \frac{1}{q} \left\{ \frac{\pi}{\sqrt{p}} - \frac{4}{\sqrt{p+q}} F \left(\frac{\pi}{4}, \sqrt{\frac{2q}{p+q}} \right) \right\}$ (VIII, 594).
- 4) $\int \text{Arccos } x \frac{dx}{\sqrt{p-qx^2}} = \frac{1}{q} \left[\frac{4}{\sqrt{p+q}} \left\{ F' \left(\sqrt{\frac{2q}{p+q}} \right) - F \left(\frac{\pi}{4}, \sqrt{\frac{2q}{p+q}} \right) \right\} - \frac{\pi}{\sqrt{p}} \right]$ (VIII, 594).
- 5) $\int \text{Arccos } x \frac{x dx}{\sqrt{1+x^2}} = \frac{\pi}{2} - \frac{1}{2} \sqrt{2} \cdot F' \left(\sin \frac{\pi}{4} \right)$ V. T. 9, N. 8.
- 6) $\int \text{Arccos } x \frac{x dx}{\sqrt{q^2 - p^2 x^2}} = \frac{1}{p^2 q} F' \left(\frac{p}{q} \right) - \frac{\pi}{2 p^2 q}$ V. T. 12, N. 28.
- 7) $\int \text{Arccos } x \frac{dx}{\sqrt{p^2 + x^2}} = \frac{1}{p^2} \operatorname{Arccot} p$ V. T. 12, N. 6.
- 8) $\int \frac{x \text{Arccos } x - \sqrt{1-x^2}}{(1-x^2)^2} dx = -\frac{1}{4} \pi$ V. T. 206, N. 9.
- 9) $\int (\text{Arccos } x)^2 \frac{dx}{\sqrt{1-x^2}} = \pi \log 2$ V. T. 206, N. 5.

- 10) $\int \operatorname{Arctg} x \frac{1-x}{x} \frac{dx}{\sqrt{x}} = \pi (\sqrt{2}-1)$ V. T. 10, N. 1.
- 11) $\int \operatorname{Arctg} q x \frac{dx}{x \sqrt{1-x^2}} = \frac{1}{2} \pi l \{q + \sqrt{1+q^2}\}$ (VIII, 354).
- 12) $\int \operatorname{Arctg} x \frac{x^2 dx}{\sqrt{1-x^2}} = \sqrt{2} \cdot \left\{ F' \left(\sin \frac{\pi}{4} \right) - E' \left(\sin \frac{\pi}{4} \right) \right\}$ V. T. 8, N. 27.
- 13) $\int \operatorname{Arctg} x \frac{x}{\sqrt{1-x^2}} \frac{dx}{\operatorname{Tg}^2 \lambda + x^2} = \frac{1}{2} \pi \cos \lambda \cdot l \left\{ \cos \left(\frac{\pi-4\lambda}{8} \right) \cdot \operatorname{Cosec} \left(\frac{\pi+4\lambda}{8} \right) \right\}$ V. T. 115, N. 30.
- 14) $\int \operatorname{Arctg} x \frac{x dx}{\sqrt{(1+x^2)(1+x^2-p^2 x^2)^2}} = \frac{1}{p^2} \left\{ F \left(p, \frac{\pi}{4} \right) - \frac{\pi}{2 \sqrt{2(2-p^2)}} \right\}$ (VIII, 596).
- 15) $\int \operatorname{Arccot} x \frac{x^2 dx}{\sqrt{1-x^2}} = \frac{\pi}{4} + \sqrt{2} \cdot \left\{ E' \left(\sin \frac{\pi}{4} \right) - F' \left(\sin \frac{\pi}{4} \right) \right\}$ V. T. 8, N. 27.
- 16) $\int \operatorname{Arccot} x \frac{x dx}{\sqrt{(1+x^2-p^2 x^2)^2(1+x^2)}} = \frac{1}{p^2} \left\{ \frac{\pi}{2} - \frac{\pi}{2 \sqrt{2(2-p^2)}} - F \left(p, \frac{\pi}{4} \right) \right\}$ (VIII, 596).

- 1) $\int \operatorname{Arcsin} ((q \{2x-1\})) \frac{dx}{x^2 - (1-x)^2} = 0$ (VIII, 260*).
- 2) $\int \operatorname{Arcsin} ((q \{2x-1\})) \frac{dx}{x^2 + (1-x)^2} = \frac{1}{2} \alpha \pi^2$ (VIII, 260*).
- 3) $\int \operatorname{Arcsin} \{q(2x-1)\} \frac{dx}{x^2 + (1-x)^2} = 0$ (VIII, 261*).
- 4) $\int \operatorname{Arccos} ((q \{2x-1\})) \frac{dx}{x^2 - (1-x)^2} = 0$ (VIII, 260*).
- 5) $\int \operatorname{Arccos} ((q \{2x-1\})) \frac{dx}{x^2 + (1-x)^2} = \frac{1}{4} (2\alpha + 1) \pi^2$ (VIII, 260*).
- 6) $\int \operatorname{Arccos} \{q(2x-1)\} \frac{dx}{x^2 + (1-x)^2} = \frac{1}{4} \pi^2$ (VIII, 261*).
- 7) $\int \operatorname{Arctg} \left(\frac{2px}{1+x^2} \right) \frac{dx}{x} = \frac{1}{2} \pi l \{p + \sqrt{1+p^2}\}$ V. T. 244, N. 11.
- 8) $\int \operatorname{Arctg} \{ \sqrt{1-x} \} \frac{dx}{(1-x \cos^2 \lambda) \sqrt{x}} = \frac{2\pi}{\cos \lambda} l \left\{ \cos \left(\frac{\pi-4\lambda}{8} \right) \cdot \operatorname{Cosec} \left(\frac{\pi+4\lambda}{8} \right) \right\}$ V. T. 122, N. 5.

- 9) $\int \text{Arctg} \{ \sqrt{1-x^2} \} \frac{dx}{1-x^2 \cos^2 \mu} = \frac{\pi}{\cos \mu} l \left\{ \cos \left(\frac{\pi-4\mu}{8} \right) \cdot \text{Cosec} \left(\frac{\pi+4\mu}{8} \right) \right\}$ V. T. 122, N. 5.
- 10) $\int \text{Arctg} \{ p \sqrt{1-x^2} \} \frac{dx}{1-x^2} = \frac{1}{2} \pi l \{ p + \sqrt{1+p^2} \}$ V. T. 244, N. 11.
- 11) $\int \text{Arctg} \{ \text{Tg } \lambda \cdot \sqrt{1-p^2 x^2} \} dx \sqrt{\frac{1-p^2 x^2}{1-x^2}} = \frac{1}{2} \pi E(p, \lambda) - \frac{1}{2} \pi \cot \lambda \cdot \{ 1 - \sqrt{1-p^2 \sin^2 \lambda} \}$
V. T. 341, N. 12.
- 12) $\int \text{Arctg} \{ \text{Tg } \lambda \cdot \sqrt{1-p^2 x^2} \} dx \sqrt{\frac{1-x^2}{1-p^2 x^2}} = \frac{\pi}{2p^2} \{ E(p, \lambda) - (1-p^2) F(p, \lambda) \} -$
 $-\frac{\pi}{2p^2} \cot \lambda \cdot \{ 1 - \sqrt{1-p^2 \sin^2 \lambda} \}$ (VIII, 547).
- 13) $\int \text{Arctg} \{ \text{Tg } \lambda \cdot \sqrt{1-p^2 x^2} \} \frac{dx}{\sqrt{(1-x^2)(1-p^2 x^2)}} = \frac{\pi}{2} F(p, \lambda)$ V. T. 344, N. 3.
- 14) $\int \text{Arctg} \{ \text{Tg } \lambda \cdot \sqrt{1-p^2 x^2} \} \frac{x^2 dx}{\sqrt{(1-x^2)(1-p^2 x^2)}} = \frac{\pi}{2p^2} \{ F(p, \lambda) - E(p, \lambda) \} +$
 $+\frac{\pi}{2p^2} \cot \lambda \cdot \{ 1 - \sqrt{1-p^2 \sin^2 \lambda} \}$ (VIII, 547).
- 15) $\int \text{Arctg} \{ \text{Tg } \lambda \cdot \sqrt{1-p^2 x^2} \} dx \sqrt{\frac{1-x^2}{(1-p^2 x^2)^3}} = \frac{\pi}{2p^2} \{ F(p, \lambda) - E(p, \lambda) \} +$
 $+\frac{\pi \text{Tg } \lambda}{2p^2} \{ \sqrt{1-p^2 \sin^2 \lambda} - \sqrt{1-p^2} \}$ (VIII, 547).
- 16) $\int \text{Arctg} \{ \text{Tg } \lambda \cdot \sqrt{1-p^2 x^2} \} \frac{dx}{\sqrt{(1-x^2)(1-p^2 x^2)^3}} = \frac{1}{2} \frac{\pi}{1-p^2} E(p, \lambda) -$
 $-\frac{\pi}{2} \frac{\text{Tg } \lambda}{1-p^2} \{ \sqrt{1-p^2 \sin^2 \lambda} - \sqrt{1-p^2} \}$ V. T. 344, N. 7.
- 17) $\int \text{Arctg} \{ \text{Tg } \lambda \cdot \sqrt{1-p^2 x^2} \} \frac{x^2 dx}{\sqrt{(1-x^2)(1-p^2 x^2)^3}} = \frac{\pi}{2p^2} \left\{ \frac{1}{1-p^2} E(p, \lambda) - F(p, \lambda) \right\} -$
 $-\frac{\pi \text{Tg } \lambda}{2p^2 (1-p^2)} \{ \sqrt{1-p^2 \sin^2 \lambda} - \sqrt{1-p^2} \}$ (VIII, 547).
- 18) $\int \text{Arccot} \{ \text{Tg } \lambda \cdot \sqrt{1-p^2 x^2} \} dx \sqrt{\frac{1-p^2 x^2}{1-x^2}} = \frac{1}{2} \pi E(p, \phi) - \frac{1}{2} \pi \cot \lambda \cdot \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\}$
V. T. 341, N. 13.
- 19) $\int \text{Arccot} \{ \text{Tg } \lambda \cdot \sqrt{1-p^2 x^2} \} dx \sqrt{\frac{1-x^2}{1-p^2 x^2}} = \frac{\pi}{2p^2} \{ E(p, \phi) - (1-p^2) F(p, \phi) \} -$
 $-\frac{\pi \cot \lambda}{2p^2} \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\}$ (VIII, 547).

$$20) \int \operatorname{Arccot} \{Tg \lambda \cdot \sqrt{1-p^2 x^2}\} \frac{dx}{\sqrt{(1-x^2)(1-p^2 x^2)}} = \frac{1}{2} \pi F(p, \phi) \text{ V. T. 344, N. 14.}$$

$$21) \int \operatorname{Arccot} \{Tg \lambda \cdot \sqrt{1-p^2 x^2}\} \frac{x^2 dx}{\sqrt{(1-x^2)(1-p^2 x^2)}} = \frac{\pi}{2p^2} \{F(p, \phi) - E(p, \phi)\} + \\ + \frac{\pi}{2p^2} \operatorname{Cot} \lambda \cdot \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} \text{ (VIII, 547).}$$

$$22) \int \operatorname{Arccot} \{Tg \lambda \cdot \sqrt{1-p^2 x^2}\} dx \sqrt{\frac{1-x^2}{(1-p^2 x^2)^3}} = \frac{\pi}{2p^2} \{F(p, \phi) - E(p, \phi)\} + \\ + \frac{\pi}{2p^2} Tg \lambda \cdot \sqrt{1-p^2} \cdot \left\{ 1 - \sqrt{\frac{1-p^2}{1-p^2 \sin^2 \lambda}} \right\} \text{ (VIII, 548).}$$

$$23) \int \operatorname{Arccot} \{Tg \lambda \cdot \sqrt{1-p^2 x^2}\} \frac{dx}{\sqrt{(1-x^2)(1-p^2 x^2)^3}} = \frac{1}{2} \frac{\pi}{1-p^2} E(p, \phi) - \\ - \frac{\pi}{2} \frac{Tg \lambda}{\sqrt{1-p^2}} \left\{ 1 - \sqrt{\frac{1-p^2}{1-p^2 \sin^2 \lambda}} \right\} \text{ V. T. 344, N. 18.}$$

$$24) \int \operatorname{Arccot} \{Tg \lambda \cdot \sqrt{1-p^2 x^2}\} \frac{x^2 dx}{\sqrt{(1-x^2)(1-p^2 x^2)^3}} = \frac{\pi}{2p^2} \left\{ \frac{1}{1-p^2} E(p, \phi) - F(p, \phi) \right\} - \\ - \frac{\pi Tg \lambda}{2p^2 \sqrt{1-p^2}} \left\{ 1 - \sqrt{\frac{1-p^2}{1-p^2 \sin^2 \lambda}} \right\} \text{ (VIII, 548).}$$

Dans 18) à 24) on a $\operatorname{Cot} \phi = Tg \lambda \cdot \sqrt{1-p^2}$.

$$1) \int \operatorname{Arctg} x \cdot x^{p-1} dx = \frac{1}{1-p} \frac{\pi}{2} \operatorname{Cosec} \frac{1}{2} p \pi [0 < p < 1] \text{ V. T. 16, N. 2.}$$

$$2) \int \operatorname{Arccot} x \cdot x^{p-1} dx = \frac{\pi}{2p} \operatorname{Sec} \frac{1}{2} p \pi [0 < p < 1] \text{ V. T. 16, N. 2.}$$

$$3) \int (1-x \operatorname{Arccot} x) dx = \frac{1}{4} \pi \text{ V. T. 206, N. 9.}$$

$$1) \int \operatorname{Arctg} q x \frac{dx}{x} = \infty \text{ V. T. 247, N. 3.}$$

$$2) \int \operatorname{Arctg} q x \frac{dx}{x^2} = \infty \text{ (VIII, 367).}$$

$$3) \int \operatorname{Arctg} x \frac{dx}{x^p} = \frac{1}{2} \frac{\pi}{p-1} \operatorname{Sec} \left(\frac{p-1}{2} \pi \right) [p < 1] \text{ V. T. 16, N. 2.}$$

- 4) $\int \{ \operatorname{Arctg}((px)) - \operatorname{Arctg}((qx)) \} \frac{dx}{x} = \frac{\pi}{2} \log \frac{p}{q}$ (VIII, 435).
- 5) $\int (\operatorname{Arctg} px)^2 \frac{dx}{x^2} = p\pi \log 2$ (VIII, 607*).
- 6) $\int (\operatorname{Arctg} x)^p \frac{dx}{x^2} = p \left(\frac{\pi}{2} \right)^{p-1} \left\{ 1 - \sum_{n=1}^{\infty} \frac{2}{p+2n-1} \sum_{n=1}^{\infty} \frac{1}{(2n)^{2n}} \right\}$ V. T. 250, N. 9.
- 7) $\int (\operatorname{Arctg} x - x) \frac{dx}{x^2} = -\frac{1}{4}\pi$ V. T. 206, N. 9.
- 8) $\int \operatorname{Arctg} \frac{x}{p} \cdot \operatorname{Arctg} \frac{x}{q} \frac{dx}{x^2} = \frac{\pi}{2} \left\{ \frac{1}{p} \log \frac{p+q}{q} + \frac{1}{q} \log \frac{p+q}{p} \right\}$ (VIII, 607).
- 9) $\int \operatorname{Arccot} px \frac{dx}{x} = \infty$ V. T. 135, N. 4.
- 10) $\int \operatorname{Arccot} px \frac{dx}{x^2} = \infty$ V. T. 77, N. 1.
- 11) $\int \operatorname{Arccot} x \frac{dx}{x^p} = \frac{\pi}{2(1-p)} \operatorname{Cosec} \frac{1}{2} p\pi$ V. T. 16, N. 2.
- 12) $\int \operatorname{Arctg} \frac{x}{p} \cdot \operatorname{Arccot} \frac{x}{q} \frac{dx}{x^2} = \infty$ (VIII, 605).

- 1) $\int \operatorname{Arctg} px \frac{x dx}{q^2 + x^2} = \infty$ V. T. 136, N. 14.
- 2) $\int \operatorname{Arctg} x \frac{dx}{1-x^2} = \sum_{n=0}^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2}$ V. T. 138, N. 21.
- 3) $\int \operatorname{Arctg} x \frac{x dx}{1+x^2} = \frac{1}{16} \pi^2$ V. T. 251, N. 2.
- 4) $\int \operatorname{Arctg} x \frac{x dx}{1-x^2} = -\frac{\pi}{8} \log 2$ V. T. 138, N. 24.
- 5) $\int \operatorname{Arctg} \frac{x}{p} \frac{x dx}{x^2 - q^2} = \frac{\pi}{8q^2} \log \frac{(p+q)^2}{p^2 + q^2}$ V. T. 248, N. 13.
- 6) $\int \operatorname{Arccot} x \frac{dx}{1+x} = \frac{\pi}{4} \log 2 + \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 136, N. 1.
- 7) $\int \operatorname{Arccot} x \frac{dx}{1-x} = -\frac{\pi}{4} \log 2 + \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 136, N. 2.
- 8) $\int \operatorname{Arccot} px \frac{x dx}{1+x^2} = \frac{\pi}{2} \log \frac{1+p}{p}$ (VIII, 595).

- 9) $\int \operatorname{Arccot} \frac{x}{p} \frac{x dx}{x^2 + q^2} = \frac{\pi}{2} \iota \frac{p+q}{q}$ (VIII, 599).
- 10) $\int \operatorname{Arccot} \frac{x}{p} \frac{x dx}{x^2 - q^2} = \frac{\pi}{4} \iota \frac{p^2 + q^2}{q^2}$ (VIII, 355).
- 11) $\int \operatorname{Arccot} x \frac{dx}{1-x^2} = \sum_0^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2}$ V. T. 138, N. 21.
- 12) $\int \operatorname{Arccot} x \frac{x dx}{1-x^4} = \frac{\pi}{8} \iota 2$ V. T. 138, N. 24.
- 13) $\int \operatorname{Arccot} \frac{x}{p} \frac{x dx}{x^4 - q^4} = \frac{\pi}{8q^2} \iota \frac{p^2 + q^2}{(p+q)^2}$ V. T. 248, N. 9, 10.
- 14) $\int \operatorname{Arccot} \frac{x}{p} \frac{x^3 dx}{x^4 - q^4} = \frac{\pi}{8} \iota \frac{(p+q)^2 (p^2 + q^2)}{q^4}$ V. T. 248, N. 9, 10.
- 15) $\int (\operatorname{Arccot} x)^p \frac{x dx}{1+x^2} = \left(\frac{\pi}{2}\right)^p \left[1 - \sum_1^{\infty} \frac{2}{p+2m} \sum_1^{\infty} \frac{1}{(2n)^{2n}}\right]$ V. T. 205, N. 7.

- 1) $\int \operatorname{Arctg} \frac{x}{q} \frac{dx}{(p+x)^2} = \frac{q}{p^2 + q^2} \left\{ \iota \frac{q}{p} + \frac{p\pi}{2q} \right\}$ (VIII, 595).
- 2) $\int \operatorname{Arctg} \frac{x}{q} \frac{dx}{(p-x)^2} = \frac{1}{p^2 + q^2} \left(q \iota \frac{q}{p} - \frac{1}{2} p\pi \right)$ (VIII, 595).
- 3) $\int \operatorname{Arctg} \frac{x}{q} \frac{x dx}{(p^2 + x^2)^2} = \frac{\pi}{4p(p+q)}$ (VIII, 596).
- 4) $\int \operatorname{Arctg} \frac{x}{q} \frac{x dx}{(p^2 - x^2)^2} = -\frac{\pi}{4(p^2 + q^2)}$ V. T. 249, N. 1, 2.
- 5) $\int \operatorname{Arctg} x \frac{x dx}{(1+x^2)^3} = \frac{3}{64} \pi$ V. T. 17, N. 14. 6) $\int \operatorname{Arctg} x \frac{x^3 dx}{(1+x^2)^3} = \frac{5}{64} \pi$ V. T. 17, N. 15.
- 7) $\int (\operatorname{Arctg} x)^2 \frac{1-x^2}{(1+x^2)^3} dx = -\frac{1}{4} \pi$ V. T. 249, N. 3.
- 8) $\int \operatorname{Arccot} \frac{x}{q} \frac{dx}{(p+x)^2} = \frac{q}{p^2 + q^2} \left\{ \frac{q\pi}{2p} + \iota \frac{p}{q} \right\}$ (VIII, 595).
- 9) $\int \operatorname{Arccot} \frac{x}{q} \frac{dx}{(p-x)^2} = \frac{q}{p(p^2 + q^2)} \left\{ p \iota \frac{p}{q} + \frac{1}{2} q\pi \right\}$ (VIII, 595).

$$10) \int \operatorname{Arccot} \frac{x}{q} \frac{x dx}{(p^2 + x^2)^2} = \frac{\pi q}{4p^2(p+q)} \quad (\text{VIII, 596}).$$

$$11) \int \operatorname{Arccot} \frac{x}{q} \frac{x dx}{(p^2 - x^2)^2} = \frac{-\pi q^2}{4p^2(p^2 + q^2)} \quad \text{V. T. 249, N. 8, 9.}$$

$$12) \int \operatorname{Arccot} x \frac{x dx}{(1 + x^2)^2} = \frac{5}{64} \pi \quad \text{V. T. 17, N. 14.}$$

$$13) \int \operatorname{Arccot} x \frac{x^2 dx}{(1 + x^2)^2} = \frac{3}{64} \pi \quad \text{V. T. 17, N. 15.}$$

$$14) \int (\operatorname{Arccot} x)^2 \frac{1 - x^2}{(1 + x^2)^2} dx = \frac{1}{4} \pi \quad \text{V. T. 249, N. 10.}$$

$$1) \int \operatorname{Arctg} x \frac{dx}{(1+x)x} = \frac{\pi}{4} l2 + \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad \text{V. T. 137, N. 5.}$$

$$2) \int \operatorname{Arctg} x \frac{dx}{(1-x)x} = \frac{\pi}{4} l2 + \sum_0^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2} \quad \text{V. T. 137, N. 7.}$$

$$3) \int \operatorname{Arctg} qx \frac{dx}{x(p^2 + x^2)} = \frac{\pi}{2p^2} l(1 + pq) \quad (\text{VIII, 354}).$$

$$4) \int \operatorname{Arctg} qx \frac{dx}{x(1 + p^2 x^2)} = \frac{\pi}{2} l \frac{p+q}{p} \quad (\text{VIII, 599}).$$

$$5) \int \operatorname{Arctg} \frac{x}{q} \frac{dx}{x(p^2 + x^2)} = \frac{\pi}{2p^2} l \frac{p+q}{q} \quad (\text{VIII, 603}).$$

$$6) \int \operatorname{Arctg} qx \frac{dx}{x(1 - p^2 x^2)} = \frac{\pi}{4} l \frac{p^2 + q^2}{p^2} \quad \text{V. T. 248, N. 10.}$$

$$7) \int \operatorname{Arctg} x \frac{dx}{(1-x^2)x} = \frac{3\pi}{8} l2 \quad \text{V. T. 138, N. 19.}$$

$$8) \int \operatorname{Arctg} qx \frac{dx}{x(x^2 - p^2)} = \frac{-\pi}{8p^2} l \{ (1 + pq)^2 (1 + p^2 q^2) \} \quad \text{V. T. 248, N. 14.}$$

$$9) \int (\operatorname{Arctg} x)^p \frac{dx}{x(1+x^2)} = \left(\frac{\pi}{2}\right)^p \left\{ 1 - \sum_1^{\infty} \frac{2}{p+2m} \sum_1^{\infty} \frac{1}{(2n)^{2m}} \right\} \quad \text{V. T. 205, N. 7.}$$

$$10) \int \operatorname{Arctg} x \cdot \left(\frac{x^p}{1+x^{2p}} \right)^{1/q} \frac{dx}{x} = \frac{\sqrt{\pi^3}}{2^{1/q+1} p} \frac{\Gamma(q)}{\Gamma(q+\frac{1}{2})} \quad (\text{VIII, 421}).$$

$$11) \int \operatorname{Arctg} x \frac{x^{2p}}{(1+x^{2p})^2} \frac{dx}{x} = \frac{\pi}{8p} \quad (\text{VIII, 421}).$$

$$12) \int \operatorname{Arctg} x \frac{1-x}{1+x} \frac{dx}{1+x^2} = \frac{\pi}{4} \log 2 + \sum_{n=0}^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2} \quad \text{V. T. 250, N. 1, 3.}$$

$$13) \int \operatorname{Arctg} x \frac{1+x}{1-x} \frac{dx}{1+x^2} = -\frac{\pi}{4} \log 2 + \sum_{n=0}^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2} \quad \text{V. T. 250, N. 2, 3.}$$

$$14) \int \operatorname{Arctg} qx \frac{x}{p^2+x^2} \frac{dx}{r^2+x^2} = \frac{\pi}{2(p^2-r^2)} \log \frac{1+pq}{1+qr} \quad (\text{VIII, 603}).$$

$$15) \int \frac{\operatorname{Arctg} x}{(x^p+x^{-p})^q} \frac{dx}{1+x^2} = \frac{\sqrt{\pi^3}}{2^{1/q+1} p} \frac{\Gamma(q)}{\Gamma(q+\frac{1}{2})} \quad (\text{VIII, 550}).$$

$$16) \int \operatorname{Arctg} x \frac{x}{(1+x^2)^2 - \sin^2 2\lambda} dx = \frac{\pi}{4 \sin 2\lambda} \log \frac{1+\sin \lambda}{\cos \lambda} \quad \text{V. T. 138, N. 26.}$$

$$17) \int \operatorname{Arccot} \frac{x}{q} \frac{dx}{x(p^2+x^2)} = \infty \quad (\text{VIII, 602}).$$

$$18) \int \operatorname{Arccot} x \frac{1-2x-x^2}{(1+x)(1+x^2)} dx = -\frac{3\pi}{4} \log 2 + \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad \text{V. T. 138, N. 22.}$$

$$19) \int \operatorname{Arccot} x \frac{1-x}{1+x} \frac{dx}{1+x^2} = -\frac{\pi}{4} \log 2 + \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad \text{V. T. 248, N. 8 et T. 250, N. 18.}$$

$$20) \int \operatorname{Arccot} x \frac{1+2x-x^2}{(1-x)(1+x^2)} dx = \frac{3\pi}{4} \log 2 + \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad \text{V. T. 138, N. 23.}$$

$$21) \int \operatorname{Arccot} x \frac{1+x}{1-x} \frac{dx}{1+x^2} = \frac{\pi}{4} \log 2 + \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad \text{V. T. 248, N. 8 et T. 250, N. 20.}$$

$$22) \int \operatorname{Arccot} qx \frac{x}{p^2+x^2} \frac{dx}{r^2+x^2} = \frac{\pi}{2(p^2-r^2)} \log \frac{(qr+1)p}{(pq+1)r} \quad (\text{VIII, 603}).$$

$$23) \int \operatorname{Arccot} \frac{x}{p} \frac{(q-xi)^{-a} - (q+xi)^{-a}}{i} dx = \frac{\pi}{a-1} \left\{ \left(\frac{1}{q} \right)^{a-1} - \left(\frac{1}{p+q} \right)^{a-1} \right\} \quad (\text{VIII, 582}).$$

$$24) \int \operatorname{Arccot} x \frac{x}{(1+x^2)^2 - \sin^2 2\lambda} dx = \frac{\pi}{8 \sin 2\lambda} \log \frac{(1+\sin 2\lambda)(1-\sin \lambda)}{(1-\sin 2\lambda)(1+\sin \lambda)} \quad \text{V. T. 138, N. 26.}$$

$$1) \int \operatorname{Arctg} \frac{x}{q} \frac{x dx}{\sqrt{p^2 + x^2}} = \frac{1}{\sqrt{p^2 - q^2}} \operatorname{Arctg} \frac{\sqrt{p^2 - q^2}}{q} [q < p], = \frac{1}{\sqrt{q^2 - p^2}} \operatorname{Arctg} \frac{q + \sqrt{q^2 - p^2}}{p} [q > p]$$

V. T. 21, N. 13.

$$2) \int \operatorname{Arctg} x \frac{dx}{(1+x)\sqrt{x}} = \frac{1}{4} \pi^2 \text{ (IV, 363).}$$

$$3) \int \operatorname{Arctg} x \frac{dx}{x\sqrt{1+x^2}} = 2 \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 206, N. 1.}$$

$$4) \int \operatorname{Arctg} x \frac{1}{\sin^2 \lambda - x^2 \cos^2 \lambda} \frac{dx}{\sqrt{1+x^2}} = 2 \operatorname{Cosec} \lambda \cdot \sum_{n=0}^{\infty} \frac{\sin \{(2n+1)\lambda\}}{(2n+1)^2} \text{ V. T. 207, N. 1.}$$

$$5) \int \operatorname{Arctg} \frac{x}{p} \frac{x^2 + 2p^2 - q^2}{\sqrt{p^2 + x^2}} \frac{x dx}{(q^2 + x^2)^2} = \frac{p}{q\sqrt{p^2 - q^2}} \operatorname{Arctg} \frac{\sqrt{p^2 - q^2}}{q} [q < p], =$$

$$= \frac{p}{q\sqrt{q^2 - p^2}} \operatorname{Arctg} \frac{q + \sqrt{q^2 - p^2}}{p} [q > p] \text{ V. T. 21, N. 13.}$$

$$6) \int \operatorname{Arctg} x \frac{x dx}{\sqrt{(1+x^2-p^2x^2)^2(1+x^2)}} = \frac{1}{p^2} \left\{ F(p) - \frac{\pi}{2\sqrt{1-p^2}} \right\} \text{ (VIII, 596).}$$

$$7) \int \operatorname{Arctg} x \frac{1+x^2}{(1-x^2)^2} \frac{x dx}{\sqrt{1+x^2}} = \frac{1}{4} \pi \text{ (VIII, 596).}$$

$$8) \int \operatorname{Arctg} x \frac{dx}{\sqrt{x^2 + 1} \sqrt{x^4}} = \frac{3}{8} \pi^2 \text{ (IV, 363).}$$

$$9) \int (\operatorname{Arctg} x)^2 \frac{dx}{x^2 \sqrt{1+x^2}} = -\frac{1}{4} \pi^2 + 4 \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 251, N. 3.}$$

$$10) \int \operatorname{Arccot} x \frac{dx}{\sqrt{1+x^2}} = 2 \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 206, N. 1.}$$

$$11) \int \operatorname{Arccot} \frac{x}{q} \frac{x dx}{\sqrt{p^2 + x^2}} = \frac{1}{2} \left\{ \frac{\pi}{2p} - \frac{1}{\sqrt{p^2 - q^2}} \operatorname{Arctg} \frac{\sqrt{p^2 - q^2}}{q} \right\} [q < p], =$$

$$= \frac{1}{2} \left\{ \frac{\pi}{2p} + \frac{1}{\sqrt{q^2 - p^2}} \operatorname{Arctg} \frac{p}{q + \sqrt{q^2 - p^2}} \right\} [q > p] \text{ V. T. 21, N. 13.}$$

$$12) \int \operatorname{Arccot} x \frac{dx}{(1+x)\sqrt{x}} = \frac{1}{4} \pi^2 \text{ V. T. 251, N. 2.}$$

$$13) \int \operatorname{Arccot} x \frac{x}{\cos^2 \lambda - x^2 \sin^2 \lambda} \frac{dx}{\sqrt{1+x^2}} = -2 \operatorname{Cosec} \lambda \cdot \sum_{n=0}^{\infty} \frac{\sin \{(2n+1)\lambda\}}{(2n+1)^2} \text{ V. T. 207, N. 1.}$$

$$14) \int \operatorname{Arccot} x \frac{x^2 + 2p^2 - q^2}{\sqrt{p^2 + x^2}} \frac{x dx}{(q^2 + x^2)^2} = \frac{\pi p}{2q} - \frac{p}{q \sqrt{p^2 - q^2}} \operatorname{Arctg} \frac{\sqrt{p^2 - q^2}}{q} [q < p], =$$

$$= \frac{\pi p}{2q} + \frac{p}{q \sqrt{q^2 - p^2}} \operatorname{Arctg} \frac{p}{q + \sqrt{q^2 - p^2}} [q > p] \text{ V. T. 21, N. 13.}$$

$$15) \int \operatorname{Arccot} x \frac{x dx}{\sqrt{(1+x^2-p^2x^2)^2(1+x^2)}} = \frac{1}{p^2} \left\{ \frac{\pi}{2} - F'(p) \right\} \text{ (VIII, 597).}$$

$$16) \int \operatorname{Arccot} x \frac{1+x^2}{(1-x^2)^2} \frac{x dx}{\sqrt{1+x^2}} = \frac{\pi}{4} \text{ (VIII, 596).}$$

$$17) \int (\operatorname{Arccot} x)^2 \frac{x}{\sqrt{1+x^2}} dx = -\frac{1}{4} \pi^2 + 4 \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 251, N. 10.}$$

$$1) \int \{ \operatorname{Arctg}((r+px)) - \operatorname{Arctg}((r+qx)) \} \frac{dx}{x} = \operatorname{Arccot} r \cdot \operatorname{Arctg} \frac{p}{q} \text{ (VIII, 435).}$$

$$2) \int \operatorname{Arctg} \left(\frac{2px}{1+x^2} \right) \frac{dx}{x} = \pi \operatorname{Arctg} \{ p + \sqrt{1+p^2} \} \text{ V. T. 245, N. 7.}$$

$$3) \int \left(\operatorname{Arctg} \left\{ \frac{(p-r)x}{x^2+pr} \right\} \right)^2 \frac{dx}{x^2} = \frac{2\pi}{r} \operatorname{Arctg} p + \frac{2\pi}{p} \operatorname{Arctg} r - 2\pi \frac{p+r}{pr} \operatorname{Arctg} \frac{p+r}{2} \text{ (VIII, 606).}$$

$$4) \int \operatorname{Arctg} \left\{ \frac{x^2+pr}{(p-r)x} \right\} \cdot \operatorname{Arctg} \frac{q}{x} \frac{dx}{x^2} = \infty \text{ (VIII, 605).}$$

$$5) \int \operatorname{Arctg} \left\{ \frac{(p-r)x}{1+prx^2} \right\} \cdot \operatorname{Arctg} \frac{q}{x} \frac{dx}{x^2} = \infty \text{ (VIII, 605).}$$

$$6) \int \operatorname{Arctg} \left\{ \frac{(p-r)x}{x^2+pr} \right\} \cdot \operatorname{Arctg} \left\{ \frac{(q-s)x}{x^2+qs} \right\} \frac{dx}{x^2} = \frac{\pi}{2} \left\{ \frac{q-s}{qs} \operatorname{Arctg} \frac{p}{r} + \frac{p-r}{pr} \operatorname{Arctg} \frac{q}{s} + \frac{1}{p} \operatorname{Arctg} \frac{p+q}{p+s} + \frac{1}{q} \operatorname{Arctg} \frac{q+p}{q+r} + \right. \\ \left. + \frac{1}{r} \operatorname{Arctg} \frac{r+s}{r+q} + \frac{1}{s} \operatorname{Arctg} \frac{s+r}{s+q} \right\} \text{ (VIII, 606).}$$

$$7) \int \operatorname{Arctg} \frac{x}{p} \cdot \operatorname{Arctg} \left\{ \frac{(q-s)x}{x^2+qs} \right\} \frac{dx}{x^2} = \frac{\pi}{2} \left\{ \frac{1}{p} \operatorname{Arctg} \frac{q}{s} + \frac{p+s}{ps} \operatorname{Arctg} (p+s) - \frac{p+q}{pq} \operatorname{Arctg} (p+q) - \frac{q-s}{qs} \operatorname{Arctg} p \right\} \\ \text{ (VIII, 606).}$$

$$8) \int \operatorname{Arctg} \left\{ \frac{(p-r)x}{1+prx^2} \right\} \cdot \operatorname{Arctg} \frac{x}{q} \frac{dx}{x^2} = \frac{\pi}{2} \left\{ p \operatorname{Arctg} \frac{1+pq}{pq} - r \operatorname{Arctg} \frac{1+qr}{qr} + \frac{1}{q} \operatorname{Arctg} \frac{1+pq}{1+qr} \right\} \text{ (VIII, 607).}$$

- 9) $\int \operatorname{Arctg} \left\{ \frac{(p-r)x}{1+prx^2} \right\} \cdot \operatorname{Arctg} \left\{ \frac{(q-s)x}{qs+x^2} \right\} \frac{dx}{x^2} = \frac{\pi}{2} \left\{ (p-r) \operatorname{L} \frac{q}{s} - \frac{1+pq}{q} \operatorname{L}(1+pq) + \right.$
 $\left. + \frac{1+ps}{s} \operatorname{L}(1+ps) - \frac{1+rs}{s} \operatorname{L}(1+rs) + \frac{1+qr}{q} \operatorname{L}(1+qr) \right\}$ (VIII, 606).
- 10) $\int \operatorname{Arctg}(x^2) \frac{dx}{1+x^2} = \frac{1}{8} \pi^2$ V. T. 251, N. 2. 11) $\int \operatorname{Arctg}(x^2) \frac{dx}{1+x^2} = \frac{1}{8} \pi^2$ V. T. 251, N. 8.
- 12) $\int \operatorname{Arctg} \left(\frac{1}{q} \sqrt{x} \right) \frac{dx}{(p^2+x)^2} = \frac{\pi}{2p(p+q)}$ V. T. 249, N. 3.
- 13) $\int \operatorname{Arctg} \left\{ \frac{(p-r)x}{x^2+pr} \right\} \frac{dx}{x(q^2+x^2)} = \frac{\pi}{2q^2} \operatorname{L} \frac{p(r+q)}{r(p+q)}$ (VIII, 603).
- 14) $\int \operatorname{Arctg} \left\{ \frac{(p-r)x}{1+prx^2} \right\} \frac{dx}{x(q^2+x^2)} = \frac{\pi}{2q^2} \operatorname{L} \frac{1+pq}{1+qr}$ (VIII, 603).
- 15) $\int \operatorname{Arctg} \left\{ \frac{p}{\sqrt{1+x^2}} \right\} \frac{dx}{\sqrt{1+x^2}} = \frac{\pi}{2} \operatorname{L} \{p + \sqrt{1+p^2}\}$ V. T. 245, N. 7.
- 16) $\int \operatorname{Arctg} \left\{ \frac{px}{\sqrt{1+x^2}} \right\} \frac{dx}{x\sqrt{1+x^2}} = \frac{\pi}{2} \operatorname{L} \{p + \sqrt{1+p^2}\}$ V. T. 252, N. 15.
- 17) $\int \{ \operatorname{Arctg}(\sqrt{x}) \}^2 \frac{dx}{x^{\frac{3}{2}} \sqrt{1+x}} = -\frac{1}{2} \pi^2 + 8 \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 251, N. 9.
- 18) $\int \operatorname{Arccot}(x^2) \frac{dx}{1+x^2} = \frac{1}{8} \pi^2$ V. T. 251, N. 12.
- 19) $\int \operatorname{Arccot}(x^2) \frac{dx}{1+x^2} = \frac{1}{8} \pi^2$ V. T. 252, N. 11.
- 20) $\int \operatorname{Arccot} \left(\frac{\sqrt{x}}{q} \right) \frac{dx}{(p^2+x)^2} = \frac{q\pi}{2p^2(p+q)}$ V. T. 249, N. 10.
- 21) $\int \{ \operatorname{Arccot}(\sqrt{x}) \}^2 \frac{dx}{\sqrt{1+x}} = -\frac{1}{2} \pi^2 + 8 \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 251, N. 17.

- 1) $\int \operatorname{Arctg} x \frac{dx}{x} = \sum_{n=0}^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2}$ V. T. 108, N. 10.
- 2) $\int \operatorname{Arctg} x \frac{dx}{x^2} = \frac{\pi}{4} + \frac{1}{2} \operatorname{L} 2$ (VIII, 595).

- 3) $\int \operatorname{Arctg} q x \frac{dx}{x^2} = \operatorname{Arctg} q + \frac{1}{2} q l \frac{1+q^2}{q^2}$ (VIII, 367).
- 4) $\int (\operatorname{Arctg} x)^2 \frac{dx}{x^2} = \frac{\pi^2}{16} + \frac{3}{4} \pi l 2 - \sum_{n=1}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 253, N. 7.
- 5) $\int (\operatorname{Arctg} x)^p \frac{dx}{x^2} = \left(\frac{\pi}{4}\right)^p + \frac{2^p-1}{2} p \left(\frac{\pi}{4}\right)^{p-1} \left\{1 - \sum_{n=1}^{\infty} \frac{2}{p+2n-1} \sum_{m=1}^{\infty} \frac{1}{(4m)^{2n}}\right\}$ V. T. 76, N. 10.
- 6) $\int \operatorname{Arctg} x \frac{dx}{x(1+x)} = \frac{3\pi}{8} l 2$ V. T. 235, N. 11 et T. 250, N. 1.
- 7) $\int \operatorname{Arctg} x \frac{dx}{x(1+x^2)} = \frac{3}{8} \pi l 2 - \frac{1}{2} \sum_{n=1}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 235, N. 12 et T. 250, N. 3.
- 8) $\int \operatorname{Arccot} x \frac{dx}{x} = \sum_{n=1}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 230, N. 3.
- 9) $\int \operatorname{Arccot} \frac{x}{p} \frac{dx}{x^2} = \operatorname{Arctg} p - \frac{1}{2p} l(1+p^2)$ (VIII, 367*).
- 10) $\int \operatorname{Arccot} x \frac{x dx}{1+x^2} = \frac{1}{8} \pi l 2 + \frac{1}{2} \sum_{n=1}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 204, N. 2.
- 11) $\int (\operatorname{Arccot} x)^p \frac{x dx}{1+x^2} = \frac{\pi^p}{2^{2p}} \left\{1 - 2 \sum_{n=1}^{\infty} \frac{1}{p+2n} \sum_{m=1}^{\infty} \frac{1}{(4m)^{2n}}\right\}$ V. T. 204, N. 6.
- 12) $\int \operatorname{Arccosec} \frac{x}{p} \frac{dx}{x^2} = \operatorname{Arcsin} p + \frac{1}{p} \sqrt{1-p^2} - \frac{1}{p}$ V. T. 76, N. 1.

- 1) $\int_{-1}^1 \operatorname{Arcsin} x \frac{dx}{1 \pm p x} = \pm \frac{\pi}{2p} \left\{ l(1-p^2) + 2 l \frac{2}{1 + \sqrt{1-p^2}} \right\} [p^2 < 1], =$
 $= \pm \frac{\pi}{2p} \left\{ l(p^2-1) + 2 l 2p \right\} [p^2 > 1]$ (VIII, 594).
- 2) $\int_{-1}^1 \operatorname{Arccos} x \cdot (1-x^2)^a dx = \pi \frac{2^{a/2}}{3^{a/2}}$ (VIII, 549).
- 3) $\int_{-1}^1 \operatorname{Arccos} x \cdot (1-x^2)^{a-1/2} dx = \frac{\pi^2}{2} \frac{1^{a/2}}{2^{a/2}}$ (VIII, 549).
- 4) $\int_{-1}^1 \operatorname{Arccos} x \frac{dx}{1 \pm p x} = \pm \frac{\pi}{p} l \frac{1 + \sqrt{1-p^2}}{2(1 \mp p)} [p^2 < 1], = \pm \frac{\pi}{p} l \{2p(p \mp 1)\} [p^2 > 1]$ (VIII, 594).

- 5) $\int_{-1}^1 \operatorname{Arccos} x \frac{dx}{1+x^2} = \frac{1}{4} \pi^2$ (VIII, 550).
- 6) $\int_{-1}^1 \operatorname{Arccos} x \frac{dx}{\sin^2 \lambda + x^2 \cos^2 \lambda} = \pi(\pi - 2\lambda) \operatorname{Cosec} 2\lambda$ (VIII, 550).
- 7) $\int_{-1}^1 \operatorname{Arccos} x \frac{x^{a/2} dx}{\sqrt{1-x^2}} = \frac{1}{2} \pi^2 \frac{1^{a/2}}{2^{a/2}}$ (VIII, 549).
- 8) $\int_{-\infty}^{\infty} \operatorname{Arctg} x \frac{dx}{1+(q+px)^2} = \frac{\pi}{p} \left\{ \operatorname{Arctg} \left(\frac{2pq}{1+q^2-p^2} \right) - \operatorname{Arctg} \left(\frac{2q}{1-q^2-p^2} \right) \right\}$ V. T. 254, N. 10.
- 9) $\int_{-\infty}^{\infty} \operatorname{Arctg} \left(\frac{p \cos \lambda - x}{p \sin \lambda} \right) \frac{dx}{1+x^2} = \pi \operatorname{Arctg} \left(\frac{p \cos \lambda}{1+p \sin \lambda} \right)$ Cauchy, Ann. Math. 17, 84.
- 10) $\int_{-\infty}^{\infty} \operatorname{Arctg} (q+px) \frac{dx}{1+x^2} = \frac{\pi}{2} \left\{ \operatorname{Arctg} \left(\frac{2q}{1-q^2-p^2} \right) - \operatorname{Arctg} \left(\frac{2pq}{1+q^2-p^2} \right) \right\}$ (VIII, 555).
- 11) $\int_0^{\sqrt{\frac{1}{2}}} \operatorname{Arcsin} x \frac{dx}{x} = \frac{1}{8} \pi \log 2 + \frac{1}{2} \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 204, N. 2.
- 12) $\int_0^{\sqrt{\frac{1}{2}}} (\operatorname{Arcsin} x)^p \frac{dx}{x} = \frac{\pi^p}{2^{1+p}} \left\{ 1 - \sum_{n=1}^{\infty} \frac{2}{p+2n} \sum_{m=1}^{\infty} \frac{1}{(4m)^{2n}} \right\}$ V. T. 204, N. 6.
- 13) $\int_{\sqrt{\frac{1}{2}}}^1 \operatorname{Arccos} x \frac{x dx}{1-x^2} = \frac{1}{8} \pi \log 2 + \frac{1}{2} \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 204, N. 2.
- 14) $\int_{\sqrt{\frac{1}{2}}}^1 (\operatorname{Arccos} x)^p \frac{x dx}{1-x^2} = \frac{\pi^p}{2^{1+p}} \left\{ 1 - 2 \sum_{n=1}^{\infty} \frac{1}{p+2n} \sum_{m=1}^{\infty} \frac{1}{(4m)^{2n}} \right\}$ V. T. 204, N. 6.
- 15) $\int_p^q \left\{ \operatorname{Arctg} \frac{x}{q} - \operatorname{Arctg} \frac{x}{p} \right\} \frac{x dx}{1-x^2} = \frac{1}{q} (\operatorname{Arctg} p - \operatorname{Arctg} q) \log \frac{(p+1)(q-1)}{(q+1)(p-1)}$

Winckler, Sitz. Ber. Wien. 43, 315.

- 1) $\int_0^1 \operatorname{Li} \left(\frac{1}{x} \right) \cdot x dx = 0$ V. T. 283, N. 1.
- 2) $\int_0^1 \operatorname{Li}(x) \cdot x^{p-1} dx = -\frac{1}{p} \log(1+p) [p \geq -1]$ (VIII, 542).
- 3) $\int_0^1 \operatorname{Li}(x) \frac{dx}{x^{q+1}} = \frac{1}{q} \log(1-q) [q < 1]$ (VIII, 542).
- 4) $\int_1^{\infty} \operatorname{Li}(x) \frac{dx}{x^{q+1}} = -\frac{1}{q} \log(q-1) [q > 1]$ (VIII, 542).

$$5) \int_0^{\infty} \operatorname{Si}(px) \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} \operatorname{Ei}(-pq) \text{ (VIII, 468).}$$

$$6) \int_0^{\infty} \operatorname{Si}(px) \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} \operatorname{Ci}(pq) \text{ (VIII, 469).}$$

$$7) \int_0^{\infty} \operatorname{Ci}(px) \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} \operatorname{Ei}(-pq) \text{ (VIII, 468).}$$

$$8) \int_0^{\infty} \operatorname{Ci}(px) \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \left\{ \frac{\pi}{2} - \operatorname{Si}(pq) \right\} \text{ (VIII, 469).}$$

$$9) \int_0^{\infty} \left\{ \frac{\Gamma(cx+p)}{(ax+r)^{c x+p}} - \frac{\Gamma(cx+p)}{\left(\frac{ac}{c}x+r\right)^{c x+p}} \right\} \frac{dx}{x} = \frac{\Gamma(p)}{r^p} \log \frac{c}{c}$$

$$10) \int_0^{\infty} \left\{ \frac{\Gamma(ax+p)}{\Gamma(ax+r)} - \frac{\Gamma(bx+p)}{\Gamma(bx+r)} \right\} \frac{dx}{x} = \frac{\Gamma(p)}{\Gamma(r)} \log \frac{b}{a}$$

Sur 9) et 10) voyez Winckler, Sitz. Ber. Wien. 21, 389.

$$11) \int_0^p \operatorname{E}(x) \frac{x}{1-x^2} \frac{dx}{\sqrt{p^2-x^2}} = \frac{p\pi}{2\sqrt{1-p^2}} [p < 1] \text{ (VIII, 478).}$$

PARTIE TROISIÈME

PARTIE TROISIÈME.

F. Exponent.;
Logarithmique. } Fonction entière. TABLE 256.

Lim. 0 et ∞ .

- 1) $\int e^{-x} l x dx = -A$ (VIII, 363).
- 2) $\int e^{-px} l x dx = -\frac{1}{p} (A + lp)$ (VIII, 363*).
- 3) $\int e^{-px} l(q+x) dx = \frac{1}{p} \{lq - e^{-pq} Ei(-pq)\}$ (VIII, 591).
- 4) $\int e^{-px} l(q-x)^2 dx = \frac{1}{p} \{lq^2 - 2e^{-pq} Ei(pq)\}$ (VIII, 591).
- 5) $\int e^{-px} l(q^2 - x^2)^2 dx = \frac{2}{p} \{lq^2 - e^{-pq} Ei(-pq) - e^{-pq} Ei(pq)\}$ (VIII, 591).
- 6) $\int e^{-px} l(q^2 + x^2) dx = \frac{1}{p} \{lq^2 - 2 Ci(pq) \cdot \text{Cos } pq - 2 Si(pq) \cdot \text{Sin } pq + \pi \text{Sin } pq\}$ (VIII, 592).
- 7) $\int e^{-px} l(q^4 - x^4)^2 dx = \frac{2}{p} \{4lq - e^{-pq} Ei(-pq) - e^{-pq} Ei(pq) - 2 Ci(pq) \cdot \text{Cos } pq - 2 Si(pq) \cdot \text{Sin } pq + \pi \text{Sin } pq\}$ V. T. 256, N. 5, 6.
- 8) $\int e^{-px^2} l x dx = -\frac{1}{4} (A + lp + 2l2) \sqrt{\frac{\pi}{p}}$ (VIII, 363).
- 9) $\int e^{-px^2} l(q^2 + x^2) dx = \frac{1}{p} \sqrt{\pi} \cdot \left\{ lq - \sum_1^{\infty} (-1)^n \frac{(n+1)^{n-1/2}}{(2pq)^{2n}} \right\}$ Lobatto, N. V. Amst. 6, 1.
- 10) $\int l(1 + e^{-x}) dx = \frac{1}{12} \pi^2$ V. T. 114, N. 1.
- 11) $\int l(1 - e^{-x}) dx = -\frac{1}{6} \pi^2$ V. T. 114, N. 14.
- 12) $\int e^{-ax} l(1 + e^{-x}) dx = \frac{1}{2a} \sum_1^{\infty} \frac{(-1)^{n-1}}{n}$ V. T. 106, N. 8.

$$13) \int e^{-(2a+1)x} \ln(1+e^{-x}) dx = \frac{2}{2a+1} \ln 2 + \frac{1}{2a+1} \sum_1^{2a+1} \frac{(-1)^n}{n} \quad \text{V. T. 106, N. 2.}$$

$$14) \int e^{-ax} \ln(1-e^{-x}) dx = -\frac{1}{a} \sum_1^a \frac{1}{n} \quad \text{V. T. 106, N. 7.}$$

$$15) \int (1+e^{-x})^{q-1} e^{-x} \ln(1+e^{-x}) dx = \frac{1}{q} 2^q \ln 2 - \frac{1}{q^2} (2^q - 1) \quad \text{V. T. 106, N. 5.}$$

$$16) \int (1-e^{-x})^{q-1} e^{-x} \ln(1-e^{-x}) dx = -\frac{1}{q^2} \quad \text{V. T. 106, N. 8.}$$

$$17) \int e^{-\lambda x} \ln(e^x + e^{-x}) dx = \frac{1}{\lambda} \left\{ \frac{1}{2\lambda} + \ln 2 - \sum_0^\infty \frac{(-1)^n}{2\lambda + n + 1} \right\} \quad \text{V. T. 107, N. 9.}$$

$$18) \int \ln(1 + 2e^{-x} \cos \lambda + e^{-2x}) dx = \frac{1}{6} \pi^2 - \frac{1}{2} \lambda^2 \quad (\text{VIII, 542}).$$

$$19) \int e^{-3ax} \ln(e^x + e^{-x} + 1) dx = \frac{1}{9a^2} + \frac{1}{3a} \sum_0^{a-1} \frac{9n+5}{(3n+1)(3n+2)(3n+3)} \quad \text{V. T. 107, N. 1, 12.}$$

$$20) \int e^{-(3a+1)x} \ln(e^x + e^{-x} + 1) dx = \frac{1}{(3a+1)^2} + \frac{3\ln 3}{2(3a+1)} + \frac{\pi}{2(3a+1)\sqrt{3}} + \\ + \frac{1}{3a+1} \left\{ -2 + \sum_1^a \frac{9n-1}{(3n-1)3n(3n+1)} \right\} \quad \text{V. T. 107, N. 1, 10.}$$

$$21) \int e^{-(3a-1)x} \ln(e^x + e^{-x} + 1) dx = \frac{1}{(3a-1)^2} + \frac{3\ln 3}{2(3a-1)} - \frac{\pi}{2(3a-1)\sqrt{3}} + \\ + \frac{1}{3a-1} \sum_1^{a-1} \frac{9n+2}{3n(3n+1)(3n+2)} \quad \text{V. T. 107, N. 1, 11.}$$

$$22) \int e^{-3ax} \ln(e^x + e^{-x} - 1) dx = \frac{1}{9a^2} + \frac{(-1)^{a-1}}{3a} \sum_0^{a-1} (-1)^n \frac{9n+7}{(3n+1)(3n+2)(3n+3)} \\ \text{V. T. 107, N. 1, 15.}$$

$$23) \int e^{-(3a+1)x} \ln(e^x + e^{-x} - 1) dx = \frac{1}{(3a+1)^2} + \frac{(-1)^a \pi}{(3a+1)\sqrt{3}} + \frac{(-1)^a}{3a+1} \left\{ -2 + \right. \\ \left. + \sum_1^a (-1)^n \frac{9n+1}{(3n-1)3n(3n+1)} \right\} \quad \text{V. T. 107, N. 1, 13.}$$

$$24) \int e^{-(3a-1)x} \ln(e^x + e^{-x} - 1) dx = \frac{1}{(3a-1)^2} + \frac{(-1)^{a-1} \pi}{(3a-1)\sqrt{3}} + \frac{(-1)^{a-1}}{3a-1} \left\{ -2 + \right. \\ \left. + \sum_1^{a-1} (-1)^n \frac{9n+4}{3n(3n+1)(3n+2)} \right\} \quad \text{V. T. 107, N. 1, 14.}$$

$$25) \int (1 + e^{-qx})^r e^{-qx} \{l(1 + e^{-qx})\}^a dx = \frac{2^{r+1}}{q} \sum_{n=0}^{\infty} \frac{1^{a/1}}{(r+1)^{n+1}} (-1)^n (l2)^{a-n} - (-1)^a \frac{1^{a/1}}{q(r+1)^{a+1}} \quad \text{V. T. 106, N. 34.}$$

$$26) \int (1 - e^{-qx})^r e^{-qx} \{l(1 - e^{-qx})\}^a dx = (-1)^a \frac{1^{a/1}}{q(r+1)^{a+1}} \quad \text{V. T. 106, N. 35.}$$

$$1) \int lx \frac{e^{px} + e^{-px}}{e^{\pi x} + e^{-\pi x}} dx = -\frac{1}{2} \Lambda \operatorname{Sec} \frac{1}{2} p - \sum_{n=0}^{\infty} (-1)^n \left\{ \frac{l \{ (2n+1)\pi - p \}}{(2n+1)\pi - p} + \frac{l \{ (2n+1)\pi + p \}}{(2n+1)\pi + p} \right\} [p < \pi] \quad (\text{VIII, 567}).$$

$$2) \int lx \frac{e^{ax} + e^{-ax}}{e^{bx} + e^{-bx}} dx = \frac{\pi}{2b} \operatorname{Sec} \frac{a\pi}{2b} \cdot l2\pi + \frac{\pi}{b} \sum_{n=1}^{\infty} (-1)^{n-1} \operatorname{Cos} \left(\frac{2n-1}{2b} a\pi \right) \cdot l \frac{\Gamma \left(\frac{2b+2n-1}{4b} \right)}{\Gamma \left(\frac{2n-1}{4b} \right)}$$

$$[a+b \text{ impair}], = \frac{\pi}{2b} \operatorname{Sec} \frac{a\pi}{2b} \cdot l\pi + \frac{\pi}{b} \sum_{n=1}^{\infty} (-1)^{n-1} \operatorname{Cos} \left(\frac{2n-1}{2b} a\pi \right) \cdot l \frac{\Gamma \left(\frac{2b-2n+1}{2b} \right)}{\Gamma \left(\frac{2n-1}{2b} \right)}$$

$[a+b \text{ pair}] \quad \text{V. T. 148, N. 6.}$

$$3) \int lx \frac{e^{px} - e^{-px}}{e^{\pi x} - e^{-\pi x}} dx = -\frac{1}{2} \Lambda \operatorname{Tg} \frac{1}{2} p - \sum_{n=0}^{\infty} \left\{ \frac{l \{ (2n+1)\pi - p \}}{(2n+1)\pi - p} - \frac{l \{ (2n+1)\pi + p \}}{(2n+1)\pi + p} \right\} [p < \pi] \quad (\text{VIII, 567}).$$

$$4) \int lx \frac{e^x dx}{(e^x + 1)^2} = \frac{1}{2} l2\pi + \frac{1}{2} Z' \left(\frac{1}{2} \right) \quad \text{V. T. 147, N. 7.}$$

$$5) \int lx \frac{dx}{e^{x^2} + e^{-x^2}} = \frac{1}{4} \sum_{n=0}^{\infty} (-1)^n \{ l(2n+1) + 2l2 + \Lambda \} \sqrt{\frac{\pi}{2n+1}} \quad (\text{VIII, 488}).$$

$$6) \int lx \frac{dx}{e^x + e^{-x} - 1} = \frac{2\pi}{\sqrt{3}} \left\{ \frac{5}{6} l2\pi - l\Gamma \left(\frac{1}{6} \right) \right\} \quad \text{V. T. 148, N. 5.}$$

$$7) \int lx \frac{dx}{e^x + e^{-x} + 2 \operatorname{Cos} \lambda} = \frac{\pi}{2} \operatorname{Cosec} \lambda \cdot l \frac{(2\pi)^{\frac{\lambda}{\pi}} \Gamma \left(\frac{1}{2} + \frac{\lambda}{2\pi} \right)}{\Gamma \left(\frac{1}{2} - \frac{\lambda}{2\pi} \right)} \quad \text{V. T. 147, N. 9.}$$

$$8) \int lx \frac{dx}{e^{x^2} + e^{-x^2} + 1} = \frac{1}{2} \operatorname{Cosec} \frac{\pi}{3} \cdot \sum_{n=1}^{\infty} (-1)^n \operatorname{Sin} \frac{n\pi}{3} \cdot (ln + 2l2 + \Lambda) \sqrt{\frac{\pi}{n}} \quad (\text{VIII, 487}).$$

$$1) \int l(1+x^2) \frac{dx}{e^{\frac{1}{2}\pi x} + e^{-\frac{1}{2}\pi x}} = l \frac{4}{\pi} \text{ (IV, 370).}$$

$$2) \int l(1+x^2) \frac{e^{\frac{1}{2}\pi x} + e^{-\frac{1}{2}\pi x}}{(e^{\frac{1}{2}\pi x} - e^{-\frac{1}{2}\pi x})^2} dx = 2\sqrt{2} - \frac{8}{\pi} + \frac{2\sqrt{2}}{\pi} l \frac{\sqrt{2}+1}{\sqrt{2}-1} \text{ V. T. 97, N. 9.}$$

$$3) \int l(1+x^2) \frac{e^{\frac{1}{2}\pi x} + e^{-\frac{1}{2}\pi x}}{(e^{\frac{1}{2}\pi x} - e^{-\frac{1}{2}\pi x})^2} dx = \frac{\pi-2}{\pi} \text{ V. T. 97, N. 8.}$$

$$4) \int l(1+x^2) \frac{e^{\pi x} + e^{-\pi x}}{(e^{\pi x} - e^{-\pi x})^2} dx = \frac{2l2-1}{2\pi} \text{ V. T. 97, N. 7.}$$

$$5) \int l(1+x^2) \frac{dx}{(e^{qx} - e^{-qx})^2} = \frac{1}{2q} \left\{ l \frac{q}{\pi} + \frac{\pi}{2q} - Z' \left(\frac{\pi+q}{\pi} \right) \right\} \text{ V. T. 97, N. 15.}$$

$$6) \int l \left(\frac{9}{4} + x^2 \right) \frac{e^{\frac{1}{2}\pi x} - e^{-\frac{1}{2}\pi x}}{e^{\pi x} - e^{-\pi x}} dx = 2 \sin \frac{\pi}{8} \cdot l \left(\frac{1}{2} \cot \frac{\pi}{12} \right) \text{ (IV, 371).}$$

$$7) \int l(q^2 + x^2) \frac{e^{\frac{b\pi x}{a}} + e^{-\frac{b\pi x}{a}}}{e^{\pi x} + e^{-\pi x}} dx = \sec \frac{b\pi}{2a} \cdot l2a + 2 \sum_1^{a-1} (-1)^{n-1} \cos \left\{ \left(n - \frac{1}{2} \right) \frac{b\pi}{a} \right\} \cdot l \frac{\Gamma \left(\frac{q+a+n-1}{2a} \right)}{\Gamma \left(\frac{q+n-1}{2a} \right)}$$

$$[a+b \text{ impair}], = \sec \frac{b\pi}{2a} \cdot la + 2 \sum_1^{a-1} (-1)^{n-1} \cos \left\{ \left(n - \frac{1}{2} \right) \frac{b\pi}{a} \right\} \cdot l \frac{\Gamma \left(\frac{q+a-n+1}{a} \right)}{\Gamma \left(\frac{q+n-1}{a} \right)}$$

$[a+b \text{ pair}] \text{ (IV, 371).}$

$$8) \int l(q^2 + x^2) \frac{e^{\frac{b\pi x}{a}} - e^{-\frac{b\pi x}{a}}}{e^{\pi x} - e^{-\pi x}} dx = \tan \frac{b\pi}{2a} \cdot l2a + 2 \sum_1^{a-1} (-1)^{n-1} \sin \frac{n b \pi}{a} \cdot l \frac{\Gamma \left(\frac{q+a+n}{2a} \right)}{\Gamma \left(\frac{q+n}{2a} \right)}$$

$$[a+b \text{ impair}], = \tan \frac{b\pi}{2a} \cdot la + 2 \sum_1^{a-1} (-1)^{n-1} \sin \frac{n b \pi}{a} \cdot l \frac{\Gamma \left(\frac{q+a-n}{a} \right)}{\Gamma \left(\frac{q+n}{a} \right)} [a+b \text{ pair}] \text{ (IV, 371).}$$

$$9) \int l \left(\frac{1}{4} a^2 + x^2 \right) \frac{e^{\frac{b\pi x}{a}} + e^{-\frac{b\pi x}{a}}}{e^{\pi x} + e^{-\pi x}} dx = \sum_1^a (-1)^{n-1} \cos \left\{ \left(n - \frac{1}{2} \right) \frac{b\pi}{a} \right\} \cdot l \left\{ \left(\frac{a+1}{2} - n \right) \cot \left(\frac{\pi}{4} - \frac{2n-1}{4a} \pi \right) \right\} [a+b \text{ impair}] \text{ (IV, 371).}$$

$$10) \int l \left(\frac{1}{4} a^2 + x^2 \right) \frac{e^{\frac{b\pi x}{a}} - e^{-\frac{b\pi x}{a}}}{e^{\pi x} - e^{-\pi x}} dx = \sum_1^{a-1} (-1)^{n-1} \sin \frac{n b \pi}{a} \cdot l \left\{ \left(\frac{1}{2} a - n \right) \cot \left(\frac{\pi}{4} - \frac{n\pi}{2a} \right) \right\}$$

$[a+b \text{ pair}] \text{ (IV, 371).}$

F. Expon. polynôme en dén.;
Log. en num. $l(p^2 \pm x^2)$.

TABLE 258, suite.

Lim. 0 et ∞ .

$$11) \int l(q^2 + x^2) \frac{dx}{e^{\frac{1}{2}\pi x} + e^{-\frac{1}{2}\pi x}} = 2l \frac{\Gamma\left(\frac{q+3}{4}\right)}{\Gamma\left(\frac{q+1}{4}\right)} \quad (\text{IV, 372*}).$$

$$12) \int l(q^2 + x^2) \frac{e^{\frac{3}{2}\pi x} - e^{-\frac{3}{2}\pi x}}{e^{\pi x} - e^{-\pi x}} dx = 2 \sin \frac{\pi}{3} \cdot l \frac{6\Gamma\left(\frac{q+4}{6}\right)\Gamma\left(\frac{q+5}{6}\right)}{\Gamma\left(\frac{q+1}{6}\right)\Gamma\left(\frac{q+2}{6}\right)} \quad (\text{IV, 372}).$$

$$13) \int l(q^2 - x^2) \frac{dx}{(e^{\pi x} - e^{-\pi x})^2} = \frac{1}{4\pi q^2} \sum_{n=0}^{\infty} (-1)^{n-1} \frac{B_{2n+1}}{n+1} \frac{1}{q^{2n}} \quad \text{V. T. 97, N. 21.}$$

F. Expon. polynôme en dén.;

Logar. en num. de fonct. Expon.

TABLE 259.

Lim. 0 et ∞ .

$$1) \int l(1 + e^{-x}) \frac{dx}{1 + e^{-x}} = \frac{1}{12} \pi^2 - \frac{1}{2} (l2)^2 \quad \text{V. T. 114, N. 4.}$$

$$2) \int l(1 + e^{-x}) \frac{1 - e^{-2ax}}{1 + e^x} dx = 2l2 \cdot \sum_{n=0}^{a-1} \frac{1}{2n+1} - \sum_{n=1}^{\infty} \frac{1}{n} \sum_{m=1}^{\infty} \frac{(-1)^{m-1}}{m} \quad \text{V. T. 114, N. 8.}$$

$$3) \int l(1 + e^{-x}) \frac{1 + e^{-(2a+1)x}}{1 + e^x} dx = 2l2 \cdot \sum_{n=0}^a \frac{1}{2n+1} - \sum_{n=1}^{\infty} \frac{1}{n} \sum_{m=1}^{\infty} \frac{(-1)^{m-1}}{m} \quad \text{V. T. 114, N. 7.}$$

$$4) \int l(1 + e^{-x}) \frac{1 - e^{-2ax}}{1 - e^x} dx = -2l2 \cdot \sum_{n=0}^{a-1} \frac{1}{2n+1} + \sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{n} \sum_{m=1}^{\infty} \frac{(-1)^{m-1}}{m} \quad \text{V. T. 114, N. 9.}$$

$$5) \int l(1 + e^{-x}) \frac{1 - e^{-(2a+1)x}}{1 - e^x} dx = -2l2 \cdot \sum_{n=0}^a \frac{1}{2n+1} + \sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{n} \sum_{m=1}^{\infty} \frac{(-1)^{m-1}}{m} \quad \text{V. T. 114, N. 10.}$$

$$6) \int l(1 - e^{-x}) \frac{1 - e^{-ax}}{1 - e^x} dx = \sum_{n=1}^{\infty} \frac{1}{n} \sum_{m=1}^{\infty} \frac{1}{m} \quad \text{V. T. 114, N. 16.}$$

$$7) \int l(1 - e^{-x}) \frac{1 - (-1)^a e^{-ax}}{1 + e^x} dx = - \sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{n} \sum_{m=1}^{\infty} \frac{1}{m} \quad \text{V. T. 114, N. 15.}$$

$$8) \int l(1 + pe^{-x}) \frac{dx}{e^x + pe^{-x}} = \frac{1}{2\sqrt{p}} \operatorname{Arctg}(\sqrt{p}) \cdot l(1+p) \quad \text{V. T. 114, N. 21.}$$

$$9) \int l(p + e^{-x}) \frac{dx}{e^{-x} + pe^x} = \frac{1}{2\sqrt{p}} \operatorname{Arccot}(\sqrt{p}) \cdot l\{(1+p)p\} \quad \text{V. T. 114, N. 20.}$$

$$10) \int l(\cos^2 \lambda + e^{-2x} \sin^2 \lambda) \frac{dx}{e^x - e^{-x}} = -\lambda^2 \quad \text{V. T. 114, N. 27.}$$

$$11) \int l(e^{\frac{1}{2}x} + e^{-\frac{1}{2}x}) \frac{dx}{e^x + e^{-x}} = \frac{\pi}{8} l2 + \frac{1}{2} \sum_{n=1}^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad \text{V. T. 115, N. 4.}$$

$$12) \int l(1 + e^{-x}) \frac{e^{-x} dx}{(1 + e^{-x})^{q+1}} = -\frac{1}{q \cdot 2^q} l2 + \frac{1}{q^2 \cdot 2^q} (2^q - 1) \quad \text{V. T. 114, N. 6.}$$

$$13) \int l(1 + e^{-x}) \frac{dx}{(pe^x + qe^{-x})^2} = \frac{1}{p(p-q)} l \frac{p+q}{q} + \frac{2}{q^2 - p^2} l2 \quad \text{V. T. 114, N. 5.}$$

$$14) \int l(p + qe^{-x}) \frac{dx}{(e^x + e^{-x})^2} = \frac{1}{p-q} \left\{ \frac{1}{2} (p+q) l(p+q) - qlq - pl2 \right\} \quad \text{V. T. 114, N. 22.}$$

$$15) \int l(1 + e^{-x}) \frac{e^x + e^{-x}}{e^x + q^2 e^{-x}} \frac{dx}{e^{-x} + q^2 e^x} = \frac{\pi}{2q(1+q^2)} \left\{ \frac{\pi}{2} l(1+q^2) - 2 \text{Arctg } q \cdot lq \right\}$$

V. T. 114, N. 11.

$$16) \int l \frac{e^x + e^{-x}}{e^x - e^{-x}} \frac{dx}{e^x + e^{-x}} = \frac{\pi}{4} l2 \quad \text{V. T. 115, N. 20.}$$

$$1) \int_{-\infty}^{\infty} lx \frac{dx}{e^x + e^{-x}} = \frac{\pi}{2} l \left\{ \frac{\Gamma(\frac{3}{4})}{\Gamma(\frac{1}{4})} \sqrt{2\pi} \right\} \quad \text{V. T. 148, N. 1.}$$

$$2) \int_{-\infty}^{\infty} lx \frac{e^{ax} - e^{-ax}}{e^{bx} - e^{-bx}} dx = \frac{\pi}{2b} Tg \frac{a\pi}{2b} \cdot l2\pi + \frac{\pi}{b} \sum_{n=1}^{b-1} (-1)^{n-1} \text{Sin } \frac{n a \pi}{b} \cdot l \frac{\Gamma(\frac{b+n}{2b})}{\Gamma(\frac{n}{2b})} [a+b \text{ impair}], =$$

$$= \frac{\pi}{2b} Tg \frac{a\pi}{2b} \cdot l\pi + \frac{\pi}{b} \sum_{n=1}^{b-1} (-1)^{n-1} \text{Sin } \frac{n a \pi}{b} \cdot l \frac{\Gamma(\frac{b-n}{2b})}{\Gamma(\frac{n}{2b})} [a+b \text{ pair}] \quad \text{V. T. 148, N. 3.}$$

$$3) \int_{-\infty}^{\infty} lx \frac{dx}{e^x + e^{-x} + 1} = \frac{\pi}{\sqrt{3}} l \left\{ \frac{\Gamma(\frac{3}{4})}{\Gamma(\frac{1}{4})} \sqrt{2\pi} \right\} \quad \text{V. T. 148, N. 2.}$$

$$4) \int_{-\infty}^{\infty} lx \frac{e^{(a-1)x} dx}{1 + e^{2x} + e^{4x} + \dots + e^{2(a-1)x}} = \frac{\pi}{2a} Tg \frac{\pi}{2a} \cdot l2\pi + \frac{\pi}{a} \sum_{n=1}^{a-1} (-1)^{n-1} \text{Sin } \frac{n\pi}{a} \cdot l \frac{\Gamma(\frac{a+n}{2a})}{\Gamma(\frac{n}{2a})}$$

$$[a \text{ pair}], = \frac{\pi}{2a} Tg \frac{\pi}{2a} \cdot l\pi + \frac{\pi}{a} \sum_{n=1}^{a-1} (-1)^{n-1} \text{Sin } \frac{n\pi}{a} \cdot l \frac{\Gamma(\frac{a-n}{2a})}{\Gamma(\frac{n}{2a})} [a \text{ impair}] \quad \text{V. T. 148, N. 4.}$$

- 5) $\int_1^{\infty} e^{-qx} \ln x dx = -\frac{1}{q} Ei(-q)$ V. T. 104, N. 10.
- 6) $\int_1^{\infty} \ln x \frac{e^{qx} - e^{-qx}}{(e^{qx} + e^{-qx})^2} dx = \frac{1}{q\pi} \sum_{n=1}^{\infty} \frac{(-1)^n}{2n+1} \ln \left\{ 1 + \left(\frac{2n+1}{2q} \pi \right)^2 \right\}$ V. T. 104, N. 13.
- 7) $\int_1^{\infty} \ln x \frac{e^{qx} + e^{-qx}}{(e^{qx} - e^{-qx})^2} dx = \frac{1}{2q^2} + \frac{1}{q\pi} \sum_{n=1}^{\infty} \frac{(-1)^n}{n} \operatorname{Arcsig} \frac{n\pi}{q}$ V. T. 104, N. 14.
- 8) $\int_0^1 e^{\sqrt{x}-1} \ln(1-\sqrt{x}) dx = 2 \frac{1-e}{e}$ (VIII, 592).
- 9) $\int_0^{\infty} \frac{e^{-x}}{\ln x} dx = 0$ V. T. 31, N. 2.
- 10) $\int_0^{2\pi} \ln(1-pe^{\pm x i}) dx = 0$ (IV, 373).
- 11) $\int_0^{2\pi} e^{-ax i} \ln(r+pe^{x i}) dx = 2\pi \frac{p^a}{1^a i} \ln r$ (VIII, 273).
- 12) $\int_{-\pi}^{\pi} e^{-qx i} \ln(1-pe^{x i}) dx = -\frac{2\pi}{q} p^q [p^2 < 1]$ (IV, 373).
- 13) $\int_{-\pi}^{\pi} e^{qx i} \ln(1-pe^{x i}) dx = 0 [p^2 < 1]$ (IV, 373).

- 1) $\int e^{-px} \sin qx dx = \frac{q}{p^2 + q^2}$ (VIII, 202).
- 2) $\int e^{-px} \cos qx dx = \frac{p}{p^2 + q^2}$ (VIII, 202).
- 3) $\int e^{-px} \sin(qx + \lambda) dx = \frac{1}{p^2 + q^2} (q \cos \lambda + p \sin \lambda)$ (VIII, 202*).
- 4) $\int e^{-px} \cos(qx + \lambda) dx = \frac{1}{p^2 + q^2} (p \cos \lambda - q \sin \lambda)$ (VIII, 202*).
- 5) $\int e^{-px} \sin qix dx = \frac{q^i}{p^2 - q^2}$ (VIII, 202*).
- 6) $\int e^{-x \cos \lambda} \sin(\lambda - x \sin \lambda) dx = 0$ (VIII, 629).
- 7) $\int e^{-x \cos \lambda} \cos(\lambda - x \sin \lambda) dx = 1$ (VIII, 629).
- 8) $\int e^{-px} \cot qx dx = 4q \sum_{n=1}^{\infty} \frac{n}{p^2 + 4q^2 n^2}$ (IV, 374).
- 9) $\int e^{-px} \sin(2q\sqrt{x}) dx = \frac{q}{p} e^{-\frac{q^2}{p}} \sqrt{\frac{\pi}{p}}$ (VIII, 519).

F. Exp. $e^{\pm ax}$;

Circ. Dir. ent. à un facteur.

TABLE 261, suite.

Lim. 0 et ∞ .

$$10) \int e^{-px} Tg(q\sqrt{x}) dx = \frac{2q}{p} \sqrt{\frac{\pi}{p}} \cdot \sum_1^{\infty} (-1)^n n e^{-\frac{n^2 q^2}{p}} \quad \text{V. T. 362, N. 15.}$$

$$11) \int e^{-px} Cot(q\sqrt{x}) dx = -\frac{2q}{p} \sqrt{\frac{\pi}{p}} \cdot \sum_1^{\infty} n e^{-\frac{n^2 q^2}{p}} \quad \text{V. T. 362, N. 16.}$$

$$12) \int e^{-px} Cosec(2q\sqrt{x}) dx = -\frac{2q}{p} \sqrt{\frac{\pi}{p}} \cdot \sum_1^{\infty} (2n-1) e^{-(2n-1)^2 \frac{q^2}{p}} \quad \text{V. T. 362, N. 17.}$$

F. Exp. $e^{\pm ax}$;

Circ. Dir. ent. d'autre forme.

TABLE 262.

Lim. 0 et ∞ .

$$1) \int e^{-px} \sin^2 a x dx = \frac{1}{p} \frac{1^{2a/1}}{(p^2+2^2)(p^2+4^2)\dots\{p^2+(2a)^2\}} \quad (\text{VIII, 249}).$$

$$2) \int e^{-px} \sin^{2a+1} x dx = \frac{1^{2a+1/1}}{(p^2+1^2)(p^2+3^2)\dots\{p^2+(2a+1)^2\}} \quad (\text{VIII, 249}).$$

$$3) \int e^{-px} \cos^2 a x dx = \frac{1}{p} \frac{1^{2a/1}}{(p^2+2^2)(p^2+4^2)\dots\{p^2+(2a)^2\}} \left\{ 1 + \frac{p^2}{1.2} + \frac{p^2(p^2+2^2)}{1^{1/1}} + \dots + \right. \\ \left. + \frac{p^2(p^2+2^2)(p^2+4^2)\dots\{p^2+(2a-2)^2\}}{1^{2a/1}} \right\} \quad (\text{VIII, 252}).$$

$$4) \int e^{-px} \cos^{2a+1} x dx = p \frac{1^{2a+1/1}}{(p^2+1^2)(p^2+3^2)\dots\{p^2+(2a+1)^2\}} \left\{ 1 + \frac{p^2+1^2}{1.2.3} + \right. \\ \left. + \frac{(p^2+1^2)(p^2+3^2)}{1^{3/1}} + \dots + \frac{(p^2+1^2)(p^2+3^2)\dots\{p^2+(2a-1)^2\}}{1^{2a+1/1}} \right\} \quad (\text{VIII, 252}).$$

$$5) \int e^{-px} \sin qx \cdot \sin rx dx = \frac{2pqr}{\{p^2+(q-r)^2\} \{p^2+(q+r)^2\}} \quad (\text{VIII, 332}).$$

$$6) \int e^{-px} \sin qx \cdot \cos rx dx = q \frac{p^2+q^2-r^2}{\{p^2+(q-r)^2\} \{p^2+(q+r)^2\}} \quad (\text{VIII, 332}).$$

$$7) \int e^{-px} \cos qx \cdot \cos rx dx = p \frac{p^2+q^2+r^2}{\{p^2+(q-r)^2\} \{p^2+(q+r)^2\}} \quad (\text{VIII, 332}).$$

$$8) \int e^{-px} \sin^{2a} x \cdot \sin qx dx = \frac{(-1)^a}{(2a+1)2^{2a+1}} \left\{ \frac{1}{\left(\frac{1}{2}q+a-\frac{1}{2}pi\right)} - + \frac{1}{\left(\frac{1}{2}q+a+\frac{1}{2}pi\right)} \right\}$$

$$9) \int e^{-px} \sin^{2a} x \cdot \cos qx dx = \frac{(-1)^{a-1}i}{(2a+1)2^{2a+1}} \left\{ -\frac{1}{\left(\frac{1}{2}q+a-\frac{1}{2}pi\right)} - \frac{1}{\left(\frac{1}{2}q+a+\frac{1}{2}pi\right)} \right\}$$

F. Exp. $e^{\pm ax}$;

Circ. Dir. ent. d'autre forme. TABLE 262, suite.

Lim. 0 et ∞ .

$$10) \int e^{-px} \sin^{2a-1} x \cdot \sin qx dx = \frac{(-1)^a i}{a \cdot 2^{2a+1}} \left\{ \frac{1}{\left(\frac{1}{2}(q-1) + a - \frac{1}{2}pi\right)} - \frac{1}{\left(\frac{1}{2}(q-1) + a + \frac{1}{2}pi\right)} \right\}$$

$$11) \int e^{-px} \sin^{2a-1} x \cdot \cos qx dx = \frac{(-1)^a}{a \cdot 2^{2a+1}} \left\{ \frac{1}{\left(\frac{1}{2}(q-1) + a - \frac{1}{2}pi\right)} + \frac{1}{\left(\frac{1}{2}(q-1) + a + \frac{1}{2}pi\right)} \right\}$$

$$12) \int e^{-px} (1 - e^x)^{a-1} \sin qx dx = \frac{(-1)^a i}{2a} \left\{ \frac{1}{\left(\frac{p-q}{a}\right)} - \frac{1}{\left(\frac{p+q}{a}\right)} \right\}$$

$$13) \int e^{-px} (1 - e^x)^{a-1} \cos qx dx = \frac{(-1)^{a-1}}{2a} \left\{ \frac{1}{\left(\frac{p-q}{a}\right)} + \frac{1}{\left(\frac{p+q}{a}\right)} \right\}$$

Sur 8) à 13) voyez Raabe, Dschr. Zür. 8, 1.

$$14) \int e^{-px} \cos x dx \vee \cos 2qx = \sum_0^{\infty} \frac{(-2q)^n}{n^{n-1/1}} \frac{\cos(n \operatorname{Arccot} p)}{\sqrt{1+q^{2n}}} \text{ (IV, 375).}$$

$$15) \int e^{-px} \sin(q^2 x^2) dx = \frac{1}{4q} \left\{ \cos\left(\frac{p^2}{q^2}\right) + \sin\left(\frac{p^2}{q^2}\right) \right\} \vee 2\pi - \frac{p}{q^2} \left\{ \cos\left(\frac{p^2}{q^2}\right) \cdot \sum_0^{\infty} (-1)^n \frac{1}{(4n+1)1^{2n/1}} \left(\frac{p}{q}\right)^{4n} + \sin\left(\frac{p^2}{q^2}\right) \cdot \sum_1^{\infty} (-1)^n \frac{1}{(4n-1)1^{2n-1/1}} \left(\frac{p}{q}\right)^{4n-2} \right\} \text{ (IV, 376).}$$

$$16) \int e^{-px} \cos(q^2 x^2) dx = \frac{1}{4q} \left\{ \cos\left(\frac{p^2}{q^2}\right) - \sin\left(\frac{p^2}{q^2}\right) \right\} \vee 2\pi - \frac{p}{q^2} \left\{ \sin\left(\frac{p^2}{q^2}\right) \cdot \sum_0^{\infty} (-1)^n \frac{1}{(4n+1)1^{2n/1}} \left(\frac{p}{q}\right)^{4n} - \cos\left(\frac{p^2}{q^2}\right) \cdot \sum_1^{\infty} (-1)^n \frac{1}{(4n-1)1^{2n-1/1}} \left(\frac{p}{q}\right)^{4n-2} \right\} \text{ (IV, 376).}$$

F. Exp. $e^{\pm ax^2}$;

Circ. Dir. ent.

TABLE 263.

Lim. 0 et ∞ .

$$1) \int e^{-px^2} \sin qx dx = \sum_0^{\infty} (-1)^n \frac{1}{(n+2)^{n+1/1}} \frac{q^{2n+1}}{p^{n+1}} \text{ (VIII, 490*)}.$$

$$2) \int e^{-px^2} \cos qx dx = \frac{1}{2} e^{-\frac{q^2}{4p}} \sqrt{\frac{\pi}{p}} \text{ (VIII, 518).}$$

$$3) \int e^{x^2} \cos qx dx = \frac{1+i}{2} e^{-\frac{1}{4}q^2} \sqrt{\frac{\pi}{2}} \text{ v. T. 70, N. 13, 14.}$$

$$4) \int e^{-px^2} \sin qx \cdot \sin rx dx = \frac{1}{4} \sqrt{\frac{\pi}{p}} \cdot \left\{ e^{-\frac{(q-r)^2}{4p}} - e^{-\frac{(q+r)^2}{4p}} \right\} \quad \text{V. T. 263, N. 2.}$$

$$5) \int e^{-px^2} \cos qx \cdot \cos rx dx = \frac{1}{4} \sqrt{\frac{\pi}{p}} \cdot \left\{ e^{-\frac{(q-r)^2}{4p}} + e^{-\frac{(q+r)^2}{4p}} \right\} \quad \text{V. T. 263, N. 2.}$$

$$6) \int e^{-px^2} \sin^2 qx dx = \frac{1}{2} \left(1 - e^{-\frac{q^2}{p}} \right) \sqrt{\frac{\pi}{p}} \quad \text{V. T. 26, N. 2 et T. 263, N. 2.}$$

$$7) \int e^{-x^2} \cot qx dx = \sqrt{\pi} \cdot \sum_1^{\infty} e^{-(nq)^2} \quad (\text{IV, 377}).$$

$$8) \int e^{-px^2} \sin(qx^2) dx = \frac{\sqrt{\pi}}{2\sqrt{p^2+q^2}} \sin\left(\frac{1}{2} \operatorname{Arctg} \frac{q}{p}\right) \quad (\text{VIII, 529*}).$$

$$9) \int e^{-px^2} \cos(qx^2) dx = \frac{\sqrt{\pi}}{2\sqrt{p^2+q^2}} \cos\left(\frac{1}{2} \operatorname{Arctg} \frac{q}{p}\right) \quad (\text{VIII, 529*}).$$

$$10) \int e^{-px^2} \sin(qx^2) \cdot \cos rx dx = \frac{1}{2} \sqrt{\frac{\pi}{p^2+q^2}} \cdot e^{-ab} (b \sin ac - c \cos ac) \quad (\text{IV, 377}).$$

$$11) \int e^{-px^2} \cos(qx^2) \cdot \cos rx dx = \frac{1}{2} \sqrt{\frac{\pi}{p^2+q^2}} \cdot e^{-ab} (b \cos ac + c \sin ac) \quad (\text{IV, 377}).$$

Dans 10) et 11) on a $a = \frac{r^2}{4(p^2+q^2)}$, $2b^2 = p + \sqrt{p^2+q^2}$, $2c^2 = -p + \sqrt{p^2+q^2}$.

$$12) \int e^{-x^2} \sin\left(\frac{2p^2}{x^2}\right) dx = \frac{1}{2} e^{-1/p} \sin(2p) \cdot \sqrt{\pi} \quad (\text{IV, 377}).$$

$$13) \int e^{-x^2} \cos\left(\frac{2p^2}{x^2}\right) dx = \frac{1}{2} e^{-1/p} \cos(2p) \cdot \sqrt{\pi} \quad (\text{IV, 377}).$$

$$1) \int \frac{\sin px}{e^{qx} + 1} dx = \frac{1}{2p} - \frac{1}{q} \frac{\pi}{e^{\frac{p\pi}{q}} - e^{-\frac{p\pi}{q}}} \quad (\text{VIII, 557*}).$$

$$2) \int \frac{\sin px}{e^{qx} - 1} dx = \frac{\pi}{2q} \frac{e^{\frac{1p\pi}{q}} + 1}{e^{\frac{1p\pi}{q}} - 1} - \frac{1}{2p} \quad (\text{VIII, 557*}).$$

$$3) \int \frac{\sin pxi}{i} \frac{dx}{e^{qx} + 1} = \frac{\pi}{2q} \operatorname{Cosec} \frac{p\pi}{q} - \frac{1}{2p} \quad (\text{VIII, 557*}).$$

- 4) $\int \frac{\sin px i}{i} \frac{dx}{e^{qx} - 1} = \frac{1}{2p} - \frac{\pi}{2q} \cot \frac{p\pi}{q}$ (VIII, 556*).
- 5) $\int \frac{\sin px}{1 - e^{-x}} dx = -\sum_{n=0}^{\infty} \frac{p}{n^2 + p^2}$ Del Grosso, Mem. Nap. 2, 37.
- 6) $\int \frac{\sin px}{e^{qx} - e^{-qx}} dx = \frac{\pi}{4q} \frac{e^{\frac{p\pi}{q}} - 1}{e^{\frac{p\pi}{q}} + 1}$ (VIII, 638*).
- 7) $\int \frac{\sin px i}{i} \frac{dx}{e^{qx} - e^{-qx}} = \frac{\pi}{4q} \operatorname{Th} \frac{p\pi}{2q}$ (VIII, 557*).
- 8) $\int \frac{\sin px}{e^{qx} - e^{(q-1)x}} dx = \frac{1}{2} \pi - \frac{1}{2p} + \frac{\pi}{e^{2p\pi} - 1} - \sum_{n=1}^{\infty} \frac{p}{p^2 + (n+1)^2}$ (IV, 379).
- 9) $\int \frac{\sin px}{e^{qx} - e^{-qx}} e^{qx} dx = \sum_{n=1}^{\infty} \frac{p}{p^2 + \{(2n-1)\pi - q\}^2} [q < \pi]$ (IV, 379).
- 10) $\int \frac{\sin px}{e^{2\pi x} - 1} e^{qx} dx = \sum_{n=1}^{\infty} \frac{p}{(2n\pi - q)^2 + p^2}$ (IV, 380).
- 11) $\int \frac{\sin px}{e^{2\pi x} - 1} e^{-qx} dx = \sum_{n=1}^{\infty} \frac{p}{p^2 + (q + 2n\pi)^2}$ (IV, 380).
- 12) $\int \frac{\sin px}{1 - e^{-x}} e^{-qx} dx = \phi - \frac{1}{2p} \sin^2 \phi + \sum_{n=1}^{\infty} (-1)^n \frac{\sin^{2n} \phi \cdot \sin 2n\phi}{2^n p^{2n}} B_{2n-1}$, où $\cot \phi = \frac{q-1}{p}$
(IV, 380*).
- 13) $\int \frac{\cos px}{1 - e^{-x}} dx = \sum_{n=0}^{\infty} \frac{\pi}{n^2 + p^2}$ Del Grosso, Mem. Nap. 2, 27.
- 14) $\int \frac{\cos px}{e^{qx} + e^{-qx}} dx = \frac{\pi}{2q} \frac{1}{e^{\frac{p\pi}{q}} + e^{-\frac{p\pi}{q}}}$ (VIII, 638*).
- 15) $\int \frac{\cos px i}{e^{qx} + e^{-qx}} dx = \frac{\pi}{4q} \sec \frac{p\pi}{2q}$ (VIII, 557*).
- 16) $\int \frac{\cos px}{(e^{qx} + 1)^2} e^{qx} dx = \frac{1}{q^2} \frac{p\pi}{e^{\frac{p\pi}{q}} - e^{-\frac{p\pi}{q}}}$ V. T. 264, N. 1.
- 17) $\int \frac{\sin^2 px}{e^{qx} + e^{-qx}} dx = \frac{\pi}{8q} \frac{(e^{\frac{p\pi}{q}} - 1)^2}{e^{\frac{p\pi}{q}} + 1}$ V. T. 27, N. 2 et T. 264, N. 14.

$$18) \int \frac{\cos^2 px}{e^{qx} + e^{-qx}} dx = \frac{\pi}{8q} \frac{(e^{\frac{p\pi}{q}} + 1)^2}{e^{\frac{p\pi}{q}} + 1} \text{ V. T. 27, N. 2 et T. 264, N. 14.}$$

$$19) \int \frac{\sin px \cdot \sin rx}{e^{qx} + e^{-qx}} dx = \frac{\pi}{4q} \frac{(e^{\frac{p\pi}{q}} - e^{-\frac{p\pi}{q}})(e^{\frac{r\pi}{q}} - e^{-\frac{r\pi}{q}})}{e^{\frac{p\pi}{q}} + e^{-\frac{p\pi}{q}} + e^{\frac{r\pi}{q}} + e^{-\frac{r\pi}{q}}} \text{ V. T. 264, N. 14.}$$

$$20) \int \frac{\sin px \cdot \cos rx}{e^{qx} - e^{-qx}} dx = \frac{\pi}{4q} \frac{e^{\frac{r\pi}{q}} - e^{-\frac{r\pi}{q}}}{e^{\frac{p\pi}{q}} + e^{-\frac{p\pi}{q}} + e^{\frac{r\pi}{q}} + e^{-\frac{r\pi}{q}}} \text{ V. T. 264, N. 6.}$$

$$21) \int \frac{\cos px \cdot \cos rx}{e^{qx} + e^{-qx}} dx = \pi \frac{e^{\frac{p\pi}{q}} + e^{-\frac{p\pi}{q}}}{4q} \frac{e^{\frac{r\pi}{q}} + e^{-\frac{r\pi}{q}}}{e^{\frac{p\pi}{q}} + e^{-\frac{p\pi}{q}} + e^{\frac{r\pi}{q}} + e^{-\frac{r\pi}{q}}} \text{ V. T. 264, N. 14.}$$

$$22) \int \sin\left(p \frac{e^x + e^{-x}}{2}\right) \cdot \sin\left(r \frac{e^x - e^{-x}}{2}\right) \frac{dx}{e^x - e^{-x}} = \frac{\pi}{4} \sin p \text{ Cauchy, Ann. Math. 17, 84.}$$

$$1) \int \frac{e^{qx} - e^{-qx}}{e^{qx} + e^{-qx}} \sin rx dx = \frac{\pi}{q} \frac{1}{e^{\frac{r\pi}{2q}} - e^{-\frac{r\pi}{2q}}} \text{ (VIII, 638*)}$$

$$2) \int \frac{e^{px} - e^{-px}}{e^{qx} + e^{-qx}} \sin rx dx = \frac{\pi}{q} \frac{e^{\frac{r\pi}{2q}} - e^{-\frac{r\pi}{2q}}}{e^{\frac{r\pi}{q}} + e^{-\frac{r\pi}{q}} + 2 \cos \frac{p\pi}{q}} \sin \frac{p\pi}{2q} [p < 2q] \text{ (VIII, 638*)}$$

$$3) \int \frac{e^{qx} + e^{-qx}}{e^{qx} - e^{-qx}} \sin rx dx = \frac{\pi}{2q} \frac{e^{\frac{r\pi}{q}} + 1}{e^{\frac{r\pi}{q}} - 1} \text{ (VIII, 638*)}$$

$$4) \int \frac{e^{px} + e^{-px}}{e^{qx} - e^{-qx}} \sin rx dx = \frac{\pi}{2q} \frac{e^{\frac{r\pi}{q}} - e^{-\frac{r\pi}{q}}}{e^{\frac{r\pi}{q}} + e^{-\frac{r\pi}{q}} + 2 \cos \frac{p\pi}{q}} [p^2 \leq q^2] \text{ (VIII, 638*)}$$

$$5) \int \frac{e^{px} + e^{-px}}{e^{qx} - 1} \sin rx dx = \frac{\pi}{q} \frac{e^{\frac{3r\pi}{q}} - e^{-\frac{2r\pi}{q}}}{e^{\frac{r\pi}{q}} + e^{-\frac{r\pi}{q}} - 2 \cos \frac{2p\pi}{q}} - \frac{r}{r^2 + p^2} [p < q] \text{ (VIII, 638*)}$$

$$6) \int \frac{e^{px} + e^{-px}}{e^{qx} + e^{-qx}} \cos rx dx = \frac{\pi}{q} \frac{e^{\frac{r\pi}{2q}} + e^{-\frac{r\pi}{2q}}}{e^{\frac{r\pi}{q}} + e^{-\frac{r\pi}{q}} + 2 \cos \frac{p\pi}{q}} \cos \frac{p\pi}{2q} [p < 2q] \text{ (VIII, 638*)}$$

$$7) \int \frac{e^{px} - e^{-px}}{e^{qx} - e^{-qx}} \cos rx dx = \frac{\pi}{q} \frac{\sin \frac{p\pi}{q}}{e^{\frac{r\pi}{q}} + e^{-\frac{r\pi}{q}} + 2 \cos \frac{p\pi}{q}} [p^2 \leq q^2] \text{ (VIII, 637*)}.$$

$$8) \int \frac{e^{px} - e^{-px}}{e^{qx} - 1} \cos rx dx = \frac{\pi}{q} \frac{\sin \frac{2p\pi}{q}}{e^{\frac{r\pi}{q}} + e^{-\frac{r\pi}{q}} - 2 \cos \frac{2p\pi}{q}} - \frac{r}{p^2 + r^2} \text{ (VIII, 638*)}.$$

$$1) \int \frac{e^{-px^2}}{1 - 2r \cos x + r^2} dx = \frac{1}{1-r^2} \left\{ \frac{1}{2} + \sum_1 r^n e^{-\frac{n^2}{2p}} \right\} \sqrt{\frac{\pi}{p}} \text{ (IV, 380)}.$$

$$2) \int \frac{\cos(x\sqrt{lq})}{1 - 2q \cos(2x\sqrt{lq}) + q^2} e^{-x^2} dx = \frac{\sqrt{\pi}}{2(q-1)\sqrt{q}} \sum_1 q^{-n^2} \text{ (IV, 380)}.$$

$$3) \int \frac{\cos(x\sqrt{lq})}{1 + 2q \cos(2x\sqrt{lq}) + q^2} e^{-x^2} dx = \frac{\sqrt{\pi}}{2(q+1)\sqrt{q}} \sum_1 (-1)^{n-1} q^{-n^2} \text{ (IV, 380)}.$$

$$4) \int \frac{q \cos(x\sqrt{lq}) - \cos(3x\sqrt{lq})}{1 - 2q \cos(2x\sqrt{lq}) + q^2} e^{-x^2} dx = \frac{1}{2q} \frac{\sqrt{\pi}}{\sqrt{q}} \sum_0 q^{-n^2} = \frac{1}{4q} \frac{\sqrt{\pi}}{\sqrt{q}} \left\{ 1 + \sqrt{\frac{2}{\pi}} F'(\lambda) \right\} \text{ (IV, 381)}.$$

$$5) \int \frac{q \cos(x\sqrt{lq}) + \cos(3x\sqrt{lq})}{1 + 2q \cos(2x\sqrt{lq}) + q^2} e^{-x^2} dx = \frac{1}{2q} \frac{\sqrt{\pi}}{\sqrt{q}} \sum_0 (-1)^n q^{-n^2} = \frac{1}{4q} \frac{\sqrt{\pi}}{\sqrt{q}} \left\{ 1 + \sqrt{\frac{2}{\pi}} \sqrt{1-\lambda^2} F'(\lambda) \right\} \text{ (IV, 381)}.$$

$$6) \int \frac{q - \cos(2x\sqrt{lq})}{1 - 2q \cos(2x\sqrt{lq}) + q^2} e^{-x^2} dx = \frac{\sqrt{\pi}}{2\sqrt{q^3}} \sum_0 q^{-\left(\frac{2n+1}{2}\right)^2} = \frac{\sqrt{\pi}}{2\sqrt{q^3}} \sqrt{\frac{p}{2\pi}} F'(\lambda) \text{ (IV, 381)}.$$

Dans 4) à 6) on a $lq \cdot F'(\lambda) = \pi F' \{ \sqrt{1-\lambda^2} \}$.

$$7) \int \frac{q + \cos(2x\sqrt{lq})}{1 + 2q \cos(2x\sqrt{lq}) + q^2} e^{-x^2} dx = \frac{\sqrt{\pi}}{2\sqrt{q^3}} \sum_0 (-1)^n q^{-\left(\frac{2n+1}{2}\right)^2} \text{ (IV, 381)}.$$

$$8) \int \frac{\cos(2ax\sqrt{lq}) - r \cos\{2(a+1)x\sqrt{lq}\}}{1 - 2r \cos(2x\sqrt{lq}) + r^2} e^{-x^2} dx = \frac{1}{2} q^{-a^2} \sqrt{\pi} \cdot \sum_0 r^n q^{1/2 a^2 n - n^2} [r^2 < 1] \text{ (IV, 381)}.$$

$$9) \int \frac{\cos\{2(a-1)x\sqrt{lq}\} - r \cos\{2(a+1)x\sqrt{lq}\}}{1 - 2r \cos(4x\sqrt{lq}) + r^2} e^{-x^2} dx = \frac{1}{2} q^{-a^2} \sqrt{\pi} \cdot \sum_0 r^n q^{1/2 a^2 (2n+1) - (2n+1)^2} [r^2 < 1] \text{ (IV, 381)}.$$

$$1) \int \frac{e^x - e^{-x}}{e^x + e^{-x} + 2 \cos p} \sin qx dx = \pi \frac{e^{pq} + e^{-pq}}{e^{q\pi} - e^{-q\pi}} [p \leq \pi] \text{ (IV, 382).}$$

$$2) \int \frac{e^{rx} - e^{-rx}}{e^x + e^{-x} + 2 \cos p} \sin qx dx = \frac{\pi}{\sin p} \frac{\{e^{q(\pi-p)} - e^{-q(\pi+p)}\} \sin \{r(\pi-p)\} - \{e^{q(\pi-p)} - e^{-q(p-\pi)}\} \sin \{r(\pi+p)\}}{e^{2q\pi} - 2 \cos 2r\pi + e^{-2q\pi}} \text{ Cauchy, Ann. Math. 17, 84.}$$

$$3) \int \frac{\cos qx}{e^x + e^{-x} + 2 \cos p} dx = \frac{\pi}{2} \operatorname{Cosec} p \frac{e^{pq} - e^{-pq}}{e^{q\pi} - e^{-q\pi}} [p \leq \pi] \text{ (IV, 381).}$$

$$4) \int \frac{\cos qx}{e^x + e^{-x} + e^p + e^{-p}} dx = \frac{2\pi}{e^p - e^{-p}} \frac{\sin pq}{e^{q\pi} - e^{-q\pi}} [p \leq \pi] \text{ (IV, 381).}$$

$$5) \int \frac{e^x + e^{-x}}{e^x + e^{-x} + 2 \cos p} \cos qx dx = -\pi \cot p \frac{e^{pq} - e^{-pq}}{e^{q\pi} - e^{-q\pi}} [p \leq \pi] \text{ (IV, 382).}$$

$$6) \int \frac{e^{rx} + e^{-rx}}{e^x + e^{-x} + 2 \cos p} \cos qx dx = \frac{\pi}{\sin p} \frac{\{e^{q(\pi+p)} + e^{-q(\pi+p)}\} \cos \{r(\pi-p)\} - \{e^{q(\pi-p)} + e^{-q(p-\pi)}\} \cos \{r(\pi+p)\}}{e^{2q\pi} - 2 \cos 2r\pi + e^{-2q\pi}} \text{ Cauchy, Ann. Math. 17, 84.}$$

$$7) \int \frac{e^{px} - e^{-px}}{e^{2px} + e^{-2px} + 2 \cos 2qx} \sin qx dx = \frac{\pi}{4} \frac{q}{p^2 + q^2} \text{ (VIII, 336).}$$

$$8) \int \frac{e^{px} + e^{-px}}{e^{2px} + e^{-2px} + 2 \cos 2qx} \cos qx dx = \frac{\pi}{4} \frac{p}{p^2 + q^2} \text{ (VIII, 335).}$$

$$9) \int \frac{dx}{(e^{px} + e^{-px}) \cos qx + i(e^{px} - e^{-px}) \sin qx} = \frac{\pi}{4(p+qi)} \text{ (VIII, 297).}$$

$$10) \int \frac{\sin(px^2)}{e^{x^2} + e^{-x^2}} dx = \frac{1}{2} \sum_{n=0}^{\infty} (-1)^n \sqrt{\left\{ \frac{\pi}{2} \frac{\sqrt{p^2 + (2n+1)^2}}{p^2 + (2n+1)^2} - (2n+1) \right\}} \text{ (VIII, 488).}$$

$$11) \int \frac{\sin(px^2)}{e^{x^2} + e^{-x^2} + 1} dx = \frac{1}{2} \operatorname{Cosec} \frac{\pi}{3} \sum_{n=1}^{\infty} (-1)^{n-1} \sin \frac{n\pi}{3} \sqrt{\left\{ \frac{\pi}{2} \frac{\sqrt{p^2 + n^2} - n}{p^2 + n^2} \right\}} \text{ (VIII, 488).}$$

$$12) \int \frac{\cos(px^2)}{e^{x^2} + e^{-x^2}} dx = \frac{1}{2} \sum_{n=0}^{\infty} (-1)^n \sqrt{\left\{ \frac{\pi}{2} \frac{\sqrt{p^2 + (2n+1)^2} + (2n+1)}{p^2 + (2n+1)^2} \right\}} \text{ (VIII, 488).}$$

$$13) \int \frac{\cos(px^2)}{e^{x^2} + e^{-x^2} + 1} dx = \frac{1}{2} \operatorname{Cosec} \frac{\pi}{3} \sum_{n=1}^{\infty} (-1)^{n-1} \sin \frac{n\pi}{3} \sqrt{\left\{ \frac{\pi}{2} \frac{\sqrt{p^2 + n^2} + n}{p^2 + n^2} \right\}} \text{ (VIII, 488).}$$

$$14) \int \frac{\sin 2ax}{(e^{2\pi x} + 2e^{\pi x} \cos 2\pi x + 1)^2} \frac{dx}{e^{2\pi x} - 1} = \frac{1}{4e^{\pi}(e^{\pi} + 1)^2(e^{\pi} - 1)^2} \left\{ \frac{e^{2\pi} - 1}{2\pi} - e^{\pi} \right\}$$

Russell, Phil. Trans. 1855.

$$15) \int \frac{\sin \{(2a+1)x\}}{\sin x} e^{-px} dx = \frac{1}{2p} + \sum_1^{\infty} \frac{p}{n^2 + p^2} \quad (\text{IV, 382}).$$

$$16) \int \frac{\cos \{(2a+1)x\}}{\cos x} e^{-px} \sin x dx = \frac{2a+1}{p^2 + (2a+1)^2} + 2 \sum_0^{\infty} (-1)^n \frac{2n+1}{p^2 + (2n+1)^2} \quad (\text{IV, 382}).$$

$$17) \int \frac{\sin \{(2a+1)x\}}{\sin x} e^{-p^2 x^2} dx = \frac{\sqrt{\pi}}{p} \left\{ \frac{1}{2} + \sum_1^{\infty} e^{-\left(\frac{n}{p}\right)^2} \right\} \quad (\text{IV, 382}).$$

$$18) \int \frac{\cos \{(4a+1)x\}}{\cos x} e^{-p^2 x^2} dx = \frac{\sqrt{\pi}}{p} \left\{ \frac{1}{2} + \sum_1^{\infty} (-1)^n e^{-\left(\frac{n}{p}\right)^2} \right\} \quad (\text{IV, 382}).$$

$$19) \int \frac{\sin qx - p \sin \{(q-r)x\}}{1 - 2p \cos rx + p^2} \frac{dx}{e^{2\pi x} - 1} = \frac{1}{4(1-p)} - \frac{1}{2} \sum_0^{\infty} \frac{p^n}{nr + q} - \frac{1}{2} \sum_0^{\infty} \frac{p^n}{1 - e^{q+nr}} \quad (\text{IV, 382}).$$

$$20) \int \frac{e^{sx} - e^{-sx}}{1 - 2p \cos rx + p^2} \frac{dx}{e^{\pi x} - e^{-\pi x}} = \frac{-1}{2(1-p^2)} \operatorname{Tg} \frac{1}{2}s + \frac{2}{1-p^2} \sum_0^{\infty} \frac{p^n \sin s}{e^{nr} + 2 \cos s + e^{-nr}} [s < \pi] \quad (\text{IV, 383}).$$

$$21) \int \frac{\sin qx - p \sin \{(q-r)x\}}{1 - 2p \cos rx + p^2} \frac{dx}{e^{\pi x} - e^{-\pi x}} = \frac{1}{4(1-p)} - \frac{1}{2} \sum_0^{\infty} \frac{p^n}{1 + e^{q+nr}} \quad (\text{IV, 382}).$$

$$22) \int \frac{\sin qx - p \sin \{(q-r)x\}}{1 - 2p \cos rx + p^2} \frac{e^{sx} + e^{-sx}}{e^{\pi x} - e^{-\pi x}} dx = \frac{1}{2(1-p)} - \sum_0^{\infty} \frac{1 + e^{q+nr} \cos s}{1 + 2e^{q+nr} \cos s + e^{2q+2nr}} p^n [s < \pi] \quad (\text{IV, 382}).$$

$$23) \int \frac{e^{sx} - e^{-sx}}{1 - 2p \cos rx + p^2} \frac{\cos rx}{e^{\pi x} - e^{-\pi x}} dx = \frac{1}{1-p^2} \sum_0^{\infty} \frac{p^n \sin s}{e^{(2n+1)r} + 2 \cos s + e^{-(2n+1)r}} [s < \pi] \quad (\text{IV, 383}).$$

$$24) \int \frac{1 - p \cos rx}{1 - 2p \cos rx + p^2} \frac{e^{sx} - e^{-sx}}{e^{\pi x} - e^{-\pi x}} dx = \sum_0^{\infty} \frac{p^n \sin s}{e^{nr} + 2 \cos s + e^{-nr}} [s < \pi] \quad (\text{IV, 383}).$$

$$25) \int \frac{\cos qx - p \cos \{(q-r)x\}}{1 - 2p \cos rx + p^2} \frac{e^{sx} - e^{-sx}}{e^{\pi x} - e^{-\pi x}} dx = \sum_0^{\infty} \frac{e^{q+nr} p^n \sin s}{1 + 2e^{q+nr} \cos s + e^{2q+2nr}} [s < \pi] \quad (\text{IV, 382}).$$

$$26) \int \frac{(e^{sx} + e^{-sx}) \sin rx \cdot \sin s - (e^{sx} - e^{-sx})(e^r - \cos rx) \cos s}{e^r - 2 \cos rx + e^{-r}} \frac{dx}{e^{\pi x} - e^{-\pi x}} = \frac{\sin s}{2(e^{-r} - 1)} + \sum_0^{\infty} \frac{\sin s}{e^{nr} + 2 \cos s + e^{-nr}} [s < \pi] \quad (\text{IV, 382}).$$

$$27) \int \frac{(e^{sx} + e^{-sx}) \sin rx \cdot \sin s + (e^{sx} - e^{-sx})(e^r + \cos rx) \cos s}{e^r + 2 \cos rx + e^{-r}} \frac{dx}{e^{\pi x} - e^{-\pi x}} = \frac{\sin s}{2(e^{-r} + 1)} - \sum_0^{\infty} \frac{(-1)^n \sin s}{e^{nr} + 2 \cos s + e^{-nr}} [s < \pi] \quad (\text{IV, 382}).$$

- 1) $\int e^{-\sqrt{1+q^2}x} \sin x dx = \frac{1}{2} (\sin \frac{1}{2} q - \cos \frac{1}{2} q) \sqrt{q\pi} + \sum_0^{\infty} (-1)^n \frac{(2q)^{2n}}{(2n+1)^{2n+1}} \quad (\text{IV}, 383).$
- 2) $\int e^{-\sqrt{1+q^2}x} \cos x dx = \frac{1}{2} (\sin \frac{1}{2} q + \cos \frac{1}{2} q) \sqrt{q\pi} - \sum_0^{\infty} (-1)^n \frac{(2q)^{2n+1}}{(2n+2)^{2n+1}} \quad (\text{IV}, 383).$
- 3) $\int \{e^{-x} \cos(p\sqrt{x}) - 2pe^{-x^2} \sin px\} dx = 1 \quad (\text{IV}, 384).$
- 4) $\int e^{-\frac{p^2}{x}} \sin^2 \left(\frac{q}{x}\right) dx = q \operatorname{Arctg} \frac{q}{p} + \frac{1}{4} p \operatorname{Arctg} \frac{p^2}{p^2 + 4q^2} \quad (\text{VIII}, 581).$
- 5) $\int e^{-x^2 + px \cos \lambda} \sin(px \sin \lambda) dx = \frac{1}{2} e^{\frac{1}{2} p^2 \cos^2 \lambda} \sin\left(\frac{1}{4} p^2 \sin 2\lambda\right) \cdot \sqrt{\pi} + \frac{1}{2} \sum_0^{\infty} \frac{\sin\{(2n+1)\lambda\} \cdot p^{2n+1}}{(n+2)^{n+1}} \quad (\text{VIII}, 490).$
- 6) $\int e^{-x^2 + px \cos \lambda} \cos(px \sin \lambda) dx = \frac{1}{2} e^{\frac{1}{2} p^2 \cos^2 \lambda} \cos\left(\frac{1}{4} p^2 \sin 2\lambda\right) \cdot \sqrt{\pi} + \frac{1}{2} \sum_0^{\infty} \frac{\cos\{(2n+1)\lambda\} \cdot p^{2n+1}}{(n+2)^{n+1}} \quad (\text{VIII}, 490).$
- 7) $\int e^{-px^2} (e^{2qx} + e^{-2qx}) \sin(rx^2) dx = \frac{\sqrt{\pi}}{a} e^{-\frac{q^2}{a^2} \cos 2\alpha} \sin\left(\frac{q^2}{a^2} \sin 2\alpha\right) \quad (\text{IV}, 385).$
- 8) $\int e^{-px^2} (e^{2qx} + e^{-2qx}) \cos(rx^2) dx = \frac{\sqrt{\pi}}{a} e^{-\frac{q^2}{a^2} \cos 2\alpha} \cos\left(\frac{q^2}{a^2} \sin 2\alpha\right) \quad (\text{IV}, 385).$
- 9) $\int e^{-px^2} \{e^{2qx} \sin(rx^2 - 2sx) + e^{-2qx} \sin(rx^2 + 2sx)\} dx = \frac{\sqrt{\pi}}{a} e^c \sin \gamma \quad (\text{IV}, 385).$
- 10) $\int e^{-px^2} \{e^{2qx} \cos(rx^2 - 2sx) + e^{-2qx} \cos(rx^2 + 2sx)\} dx = \frac{\sqrt{\pi}}{a} e^c \cos \gamma \quad (\text{IV}, 385).$
- 11) $\int e^{-\frac{1}{2}\{(x+q)^2 + (x-q)^2\}} \cos\left\{\frac{(x+q)^2 - (x-q)^2}{2}\right\} dx = \frac{1}{2a} \Gamma\left(\frac{1}{2a}\right) \quad (\text{IV}, 384).$
- 12) $\int e^{-\frac{p^2}{x^2}} \sin(2q^2 x^2) dx = e^{-2pq} \sqrt{\pi} \frac{\sin 2pq + \cos 2pq}{4q} \quad (\text{VIII}, 452).$
- 13) $\int e^{-\frac{p^2}{x^2}} \cos(2q^2 x^2) dx = e^{-2pq} \sqrt{\pi} \frac{\cos 2pq - \sin 2pq}{4q} \quad (\text{VIII}, 452).$
- 14) $\int e^{-px^2 - \frac{q^2}{x^2}} \sin(rx^2) dx = \frac{1}{2} e^{-2pq} \sqrt{\frac{\pi}{p^2 + r^2}} \cdot (f \cos 2fq + g \sin 2fq) \quad (\text{VIII}, 452).$
- 15) $\int e^{-px^2 - \frac{q^2}{x^2}} \cos(rx^2) dx = \frac{1}{2} e^{-2pq} \sqrt{\frac{\pi}{p^2 + r^2}} \cdot (g \cos 2fq - f \sin 2fq) \quad (\text{VIII}, 452).$

$$16) \int e^{-p^2 x^2 \cos 2\lambda - \frac{q^2}{x^2}} \sin(p^2 x^2 \sin 2\lambda) dx = \frac{\sqrt{\pi}}{2p} e^{-p^2 q \cos \lambda} \sin(\lambda + pq \sin \lambda) \quad \text{V. T. 268, N. 14.}$$

$$17) \int e^{-p^2 x^2 \cos 2\lambda - \frac{q^2}{x^2}} \cos(p^2 x^2 \sin 2\lambda) dx = \frac{\sqrt{\pi}}{2p} e^{-p^2 q \cos \lambda} \cos(\lambda + pq \sin \lambda) \quad \text{V. T. 268, N. 15.}$$

$$18) \int e^{-x^2 - \frac{p^2 r^2}{(p^2 + q^2)x^2}} \sin\left\{\frac{p^2 q}{(p^2 + q^2)x^2}\right\} dx = \frac{1}{2} \sqrt{\pi} \cdot e^{-2p^2 r} \sin 2fp \quad (\text{IV, 383}).$$

$$19) \int e^{-x^2 - \frac{p^2 r^2}{(p^2 + q^2)x^2}} \cos\left\{\frac{p^2 q}{(p^2 + q^2)x^2}\right\} dx = \frac{1}{2} \sqrt{\pi} \cdot e^{-2p^2 r} \cos 2fp \quad (\text{IV, 383}).$$

$$20) \int e^{-p\left(x^2 + \frac{1}{x^2}\right)} \sin\left\{r\left(x^2 + \frac{1}{x^2}\right)\right\} dx = \frac{1}{2} \sqrt{\frac{\pi \cos 2\alpha}{p}} \cdot e^{-2p} \sin(\alpha + 2Tg 2\alpha) \quad \text{V. T. 268, N. 22.}$$

$$21) \int e^{-p\left(x^2 + \frac{1}{x^2}\right)} \cos\left\{r\left(x^2 + \frac{1}{x^2}\right)\right\} dx = \frac{1}{2} \sqrt{\frac{\pi \cos 2\alpha}{p}} \cdot e^{-2p} \cos(\alpha + 2Tg 2\alpha) \quad \text{V. T. 268, N. 23.}$$

$$22) \int e^{-\left(px^2 + \frac{q}{x^2}\right)} \sin\left(rx^2 + \frac{s}{x^2}\right) dx = \frac{\sqrt{\pi}}{2a} e^{-1ab \cos(\alpha + \beta)} \sin\{2ab \sin(\alpha + \beta) + \alpha\} \quad (\text{IV, 384}).$$

$$23) \int e^{-\left(px^2 + \frac{q}{x^2}\right)} \cos\left(rx^2 + \frac{s}{x^2}\right) dx = \frac{\sqrt{\pi}}{2a} e^{-1ab \cos(\alpha + \beta)} \cos\{2ab \sin(\alpha + \beta) + \alpha\} \quad (\text{IV, 384}).$$

$$24) \int e^{-\left(px^2 + \frac{q}{x^2}\right)} \sin\left(rx^2 - \frac{s}{x^2}\right) dx = \frac{\sqrt{\pi}}{2a} e^{-1ab \cos(\alpha - \beta)} \sin\{2ab \sin(\alpha - \beta) + \alpha\} \quad (\text{IV, 384}).$$

$$25) \int e^{-\left(px^2 + \frac{q}{x^2}\right)} \cos\left(rx^2 - \frac{s}{x^2}\right) dx = \frac{\sqrt{\pi}}{2a} e^{-1ab \cos(\alpha - \beta)} \cos\{2ab \sin(\alpha - \beta) + \alpha\} \quad (\text{IV, 384}).$$

$$26) \int e^{-\left(px^2 + \frac{q}{x^2}\right)} \sin rx^2 \cdot \sin\left(\frac{s}{x^2}\right) dx = \frac{\sqrt{\pi}}{4a} \left\{ e^{-1ab \cos(\alpha - \beta)} \cos\{2ab \sin(\alpha - \beta) + \alpha\} - \right. \\ \left. - e^{-1ab \cos(\alpha + \beta)} \cos\{2ab \sin(\alpha + \beta) + \alpha\} \right\} \quad \text{V. T. 268, N. 23, 25.}$$

$$27) \int e^{-\left(px^2 + \frac{q}{x^2}\right)} \sin rx^2 \cdot \cos\left(\frac{s}{x^2}\right) dx = \frac{\sqrt{\pi}}{4a} \left\{ e^{-1ab \cos(\alpha + \beta)} \sin\{2ab \sin(\alpha + \beta) + \alpha\} + \right. \\ \left. + e^{-1ab \cos(\alpha - \beta)} \sin\{2ab \sin(\alpha - \beta) + \alpha\} \right\} \quad \text{V. T. 268, N. 22, 24.}$$

$$28) \int e^{-\left(px^2 + \frac{q}{x^2}\right)} \cos rx^2 \cdot \sin\left(\frac{s}{x^2}\right) dx = \frac{\sqrt{\pi}}{4a} \left\{ e^{-1ab \cos(\alpha + \beta)} \sin\{2ab \sin(\alpha + \beta) + \alpha\} - \right. \\ \left. - e^{-1ab \cos(\alpha - \beta)} \sin\{2ab \sin(\alpha - \beta) + \alpha\} \right\} \quad \text{V. T. 268, N. 22, 24.}$$

$$29) \int e^{-\left(\frac{px^2+q}{x^2}\right)} \cos rx^2 \cdot \cos\left(\frac{s}{x^2}\right) dx = \frac{\sqrt{\pi}}{4a} \left\{ e^{-2ab \cos(\alpha+\beta)} \cos\{2ab \sin(\alpha+\beta) + \alpha\} + \right. \\ \left. + e^{-2ab \cos(\alpha-\beta)} \cos\{2ab \sin(\alpha-\beta) + \alpha\} \right\} \text{ V. T. 268, N. 23, 25.}$$

$$30) \int e^{-p \frac{1+x^2}{x^2} - \frac{q^2 x^2}{(1-x^2)^2}} \sin\left\{\frac{1+x^2}{x^2} p Tg \lambda\right\} dx = \frac{1}{2} \sqrt{\frac{\pi \cos \lambda}{p}} \cdot e^{-1(s+q+p)} \sin\left[\frac{1}{2}\{fq + p Tg \lambda + \lambda\}\right] \\ \text{(IV, 384).}$$

$$31) \int e^{-p \frac{1+x^2}{x^2} - \frac{q^2 x^2}{(1-x^2)^2}} \cos\left\{\frac{1+x^2}{x^2} p Tg \lambda\right\} dx = \frac{1}{2} \sqrt{\frac{\pi \cos \lambda}{p}} \cdot e^{-1(s+q+p)} \cos\left[\frac{1}{2}\{fq + p Tg \lambda + \lambda\}\right] \\ \text{(IV, 384).}$$

Dans 7) à 31) on a $a^2 = p^2 + r^2$, $b^2 = q^2 + s^2$, $c = \frac{q^2 + s^2}{\sqrt{p^2 + r^2}} \cos\left\{\text{Arctg} \frac{r}{p} - 2 \text{Arctg} \frac{s}{q}\right\}$,

$$f = \sqrt{\frac{-p + \sqrt{p^2 + r^2}}{2}}, g = \sqrt{\frac{p + \sqrt{p^2 + r^2}}{2}}, \alpha = \frac{1}{2} \text{Arctg} \frac{r}{p},$$

$$\beta = \frac{1}{2} \text{Arctg} \frac{s}{q}, \gamma = \frac{q^2 + s^2}{\sqrt{p^2 + r^2}} \sin\left\{\text{Arctg} \frac{r}{p} - 2 \text{Arctg} \frac{s}{q}\right\} + \text{Arctg} \frac{s}{q}.$$

$$32) \int e^{-qx^{\frac{h-1}{h-r}}} \sin\{(p-h+r)x\} dx = \left(\frac{h-1}{h-r}\right) \frac{p-h+r}{(p-h+r)^2 + q^2}$$

$$33) \int e^{-qx^{\frac{h-1}{h-r}}} \cos\{(p-h+r)x\} dx = \left(\frac{h-1}{h-r}\right) \frac{q}{(p-h+r)^2 + q^2}$$

Sur 32) et 33) voyez Raabe. Dschr. Zür. 8, 1.

$$1) \int e^{-q^2 x^2} \sin px dx = 0 \text{ (VIII, 516).}$$

$$2) \int e^{-q^2 x^2} \sin\{p(x+\lambda)\} dx = \frac{\sqrt{\pi}}{q} e^{-\frac{p^2}{4q^2}} \sin p\lambda \text{ V. T. 269, N. 1, 10.}$$

$$3) \int e^{-q^2 x^2} \cos\{p(x+\lambda)\} dx = \frac{\sqrt{\pi}}{q} e^{-\frac{p^2}{4q^2}} \cos p\lambda \text{ (IV, 385).}$$

$$4) \int e^{-q^2(x^2-2\lambda x)} \sin px dx = \frac{\sqrt{\pi}}{q} e^{-\frac{p^2}{4q^2} + q^2 \lambda^2} \sin p\lambda \text{ V. T. 269, N. 2, 3.}$$

F. Exponent.;
Circ. Dir.

TABLE 269, suite.

Lim. $-\infty$ et $+\infty$.

$$5) \int e^{-q^2(x^2-2\lambda x)} \cos px dx = \frac{\sqrt{\pi}}{q} e^{-\frac{p^2}{4q^2} + q^2\lambda^2} \cos p\lambda \quad \text{V. T. 269, N. 2, 3.}$$

$$6) \int e^{-(px^2+qx+r)} \sin (qx^2+tx+u) dx = e^{-r+\frac{p(q^2-t^2)+2qst}{4(p^2+s^2)}} \sin \left\{ u + \frac{(q^2-t^2)s-2pqt}{4(p^2+s^2)} + \frac{1}{2} \operatorname{Arctg} \frac{s}{p} \right\} \sqrt{\frac{\pi}{p^2+s^2}} \quad (\text{IV, 386}^*).$$

$$7) \int e^{-(px^2+qx+r)} \cos (qx^2+tx+u) dx = e^{-r+\frac{p(q^2-t^2)+2qst}{4(p^2+s^2)}} \cos \left\{ u + \frac{(q^2-t^2)s-2pqt}{4(p^2+s^2)} + \frac{1}{2} \operatorname{Arctg} \frac{s}{p} \right\} \sqrt{\frac{\pi}{p^2+s^2}} \quad (\text{IV, 386}^*).$$

$$8) \int e^{-\left(x^2+\frac{p^2}{x^2}\right) \cos \lambda} \sin \left\{ \left(x^2+\frac{p^2}{x^2}\right) \sin \lambda \right\} dx = e^{-2p \cos \lambda} \sin \left\{ 2p \sin \lambda + \frac{1}{2} \lambda \right\} \cdot \sqrt{\pi}$$

$$9) \int e^{-\left(x^2+\frac{p^2}{x^2}\right) \cos \lambda} \cos \left\{ \left(x^2+\frac{p^2}{x^2}\right) \sin \lambda \right\} dx = e^{-2p \cos \lambda} \cos \left\{ 2p \sin \lambda + \frac{1}{2} \lambda \right\} \cdot \sqrt{\pi}$$

Sur 8) et 9) voyez Boole, Phil. Trans. 1857.

F. Expon. $e^{\pm ax}$;
Circ. Dir.

TABLE 270.

Lim. 0 et $\frac{\pi}{2}$.

$$1) \int e^{(p+1)x} \sin^{q-1} x dx = \frac{1}{q} e^{(p+1)\pi} \quad (\text{VIII, 253}).$$

$$2) \int e^{(p+q)x} \sin^{q-1} x \cdot \cos^{p-1} x dx = e^{(p+q)\pi} \frac{\Gamma(p)\Gamma(q)}{\Gamma(p+q)} \quad (\text{VIII, 430}).$$

$$3) \int e^{1/x} \sin^2 x dx = \frac{1}{8} (3e^\pi - 1) \quad (\text{IV, 386}).$$

$$4) \int e^{-px} \sin^{2a} x dx = \frac{1^{2a+1}}{(1^2+p^2)(3^2+p^2)\dots(4a^2+p^2)} \frac{1}{p} \left[1 - e^{-\frac{1}{2}p\pi} \left\{ 1 + \frac{p^2}{1.2} + \frac{p^2(2^2+p^2)}{1^{4/1}} + \dots + \frac{p^2(2^2+p^2)\dots\{(2a-2)^2+p^2\}}{1^{2a/1}} \right\} \right] \quad (\text{VIII, 251}).$$

$$5) \int e^{-px} \sin^{2a+1} x dx = \frac{1^{2a+1/1}}{(1^2+p^2)(3^2+p^2)\dots\{(2a+1)^2+p^2\}} \left[1 - e^{-\frac{1}{2}p\pi} \left\{ 1 + \frac{1^2+p^2}{1.2.3} + \dots + \frac{(1^2+p^2)(3^2+p^2)\dots\{(2a-1)^2+p^2\}}{1^{2a+1/1}} \right\} \right] \quad (\text{VIII, 251}).$$

F. Expon. $e^{\pm ax}$;
Circ. Dir.

TABLE 270, suite.

Lim. 0 et $\frac{\pi}{2}$.

- $$6) \int e^{-px} \cos^{2a} x dx = \frac{1^{2a+1}}{(2^2+p^2)(4^2+p^2)\dots(4a^2+p^2)} \frac{1}{p} \left[-e^{-\frac{1}{2}p\pi} + 1 + \frac{p^2}{1.2} + \frac{p^2(2^2+p^2)}{1.2.4} + \dots + \frac{p^2(2^2+p^2)\dots\{(2a-2)^2+p^2\}}{1^{2a+1}} \right] \text{ (VIII, 251).}$$
- $$7) \int e^{-px} \cos^{2a+1} x dx = \frac{1^{2a+1/2}}{(1^2+p^2)(3^2+p^2)\dots\{(2a+1)^2+p^2\}} \left[e^{-\frac{1}{2}p\pi} + p \left\{ 1 + \frac{1^2+p^2}{1.2.3} + \dots + \frac{(1^2+p^2)(3^2+p^2)\dots\{(2a-1)^2+p^2\}}{1^{2a+1/2}} \right\} \right] \text{ (VIII, 251).}$$
- $$8) \int (e^{2ix} + e^{-2ix}) \cos^{2b} x dx = \frac{\pi}{2^{2b+1}} \frac{1^{2b/2}}{\Gamma(b+qi+1)\Gamma(b-qi+1)} \text{ (IV, 386).}$$
- $$9) \int \{ \sin(pe^{ix} \cos x) + \sin(p e^{-ix} \cos x) \} \frac{dx}{r^2 \cos^2 x + q^2 \sin^2 x} = \frac{\pi}{qr} \sin \frac{pq}{q+r} \text{ (VIII, 274*)}.$$
- $$10) \int \{ \cos(pe^{ix} \cos x) + \cos(p e^{-ix} \cos x) \} \frac{dx}{r^2 \cos^2 x + q^2 \sin^2 x} = \frac{\pi}{qr} \cos \frac{pq}{p+r} \text{ (VIII, 274*)}.$$

F. Exp. à exp. de Circ. Dir.;
Circ. Dir. ent.

TABLE 271.

Lim. 0 et $\frac{\pi}{2}$.

- $$1) \int e^{-q \sin x} \sin 2x dx = \frac{2}{q^2} \{ (q-1)e^q + 1 \} \text{ V. T. 80, N. 1.}$$
- $$2) \int e^{-q \sin x} dx = \text{Ci}(q) \cdot \sin q + \cos q \cdot \left\{ \frac{\pi}{2} - \text{Si}(q) \right\} \text{ V. T. 91, N. 7.}$$
- $$3) \int e^{-q \sin x} \sin x dx = -\text{Ci}(q) \cdot \cos q + \sin q \cdot \left\{ \frac{\pi}{2} - \text{Si}(q) \right\} \text{ V. T. 91, N. 8.}$$
- $$4) \int (e^{q \sin x} - e^{-q \sin x}) \sin(q \cos x) \cdot \sin 2ax dx = \frac{\pi}{2} \frac{(-1)^{a-1} q^{2a}}{1^{2a+1}} \text{ (IV, 387).}$$
- $$5) \int (e^{q \sin x} + e^{-q \sin x}) \sin(q \cos x) \cdot \cos \{(2a-1)x\} dx = \frac{\pi}{2} \frac{(-1)^{a-1} q^{2a-1}}{1^{2a-1/2}} \text{ (IV, 387).}$$
- $$6) \int (e^{q \sin x} - e^{-q \sin x}) \cos(q \cos x) \cdot \sin \{(2a-1)x\} dx = \frac{\pi}{2} \frac{(-1)^{a-1} q^{2a-1}}{1^{2a-1/2}} \text{ (IV, 387).}$$
- $$7) \int (e^{q \sin x} + e^{-q \sin x}) \cos(q \cos x) \cdot \cos 2ax dx = \frac{\pi}{2} \frac{(-1)^a q^{2a}}{1^{2a+1}} \text{ (IV, 387).}$$
- $$8) \int e^{p \cos 2x} \sin(p \sin 2x) \cdot \sin x dx = \frac{\pi}{2} (1 - e^{-p}) \text{ (VIII, 562*)}.$$

- 1) $\int e^{-q \cos x} \frac{T_p^2 x}{\sin 2x} dx = \frac{1}{2q^p} \Gamma(p) [p > -1]$ V. T. 81, N. 1.
- 2) $\int e^{-q \cos x} \frac{dx}{T_q x} = -\text{Ci}(q) \cdot \cos q + \sin q \cdot \left\{ \frac{\pi}{2} - \text{Si}(q) \right\}$ V. T. 91, N. 8.
- 3) $\int e^{-q \cos x} \frac{dx}{\cos 2x} = \frac{1}{2} \{ e^{-q} \text{Ei}(q) - e^q \text{Ei}(-q) \}$ V. T. 91, N. 14.
- 4) $\int e^{-q \cos x} \frac{T_q x}{\cos 2x} dx = \frac{1}{2} \{ e^{-q} \text{Ei}(q) + e^q \text{Ei}(-q) \}$ V. T. 91, N. 15.
- 5) $\int e^{q \cos x} \sin(q \sin 2x) \frac{dx}{T_q x} = \frac{\pi}{2} (e^q - 1)$ (VIII, 562*).
- 6) $\int e^{-q \cos^2 x} \frac{T_p^{2a} x}{\sin 2x} dx = \frac{1}{4p^a} 1^{a-1/2}$ V. T. 81, N. 7.
- 7) $\int e^{-q \cos^2 x} \frac{T_p^{2a+1} x}{\sin 2x} dx = \frac{1}{4} \frac{1^{a/2}}{(2p)^a} \sqrt{\frac{\pi}{p}}$ V. T. 81, N. 6.
- 8) $\int e^{-T_p^2 x} \frac{T_q^2 x}{\sin 2x} dx = \frac{1}{2p} \Gamma\left(\frac{q}{p}\right)$ V. T. 81, N. 8.
- 9) $\int e^{-q \cos^2 x} \frac{dx}{\cos^2 x} = \frac{1}{2} \sqrt{\frac{\pi}{p}}$ V. T. 26, N. 2.
- 10) $\int e^{-q \cos^2 x} \frac{T_p^{2a} x}{\cos^2 x} dx = \frac{1^{a/2}}{p^a \cdot 2^{a+1}} \sqrt{\frac{\pi}{p}}$ V. T. 81, N. 6.
- 11) $\int e^{-q \cos^2 x} \frac{dx}{\cos^2 x} = \frac{1+2p}{4p} \sqrt{\frac{\pi}{p}}$ V. T. 272, N. 9, 10.
- 12) $\int e^{-q \cos^2 x} \frac{\cos 2x}{\cos^2 x} dx = \frac{2p-1}{4p} \sqrt{\frac{\pi}{p}}$ V. T. 272, N. 9, 10.
- 13) $\int \frac{e^{-p \cos^2 x} - \cos^2 x}{\sin 2x} dx = -\frac{1}{2} \Lambda - \frac{1}{8} \Lambda p$ V. T. 92, N. 11.
- 14) $\int \frac{e^{-p \cos^2 x} - e^{-q \cos^2 x}}{\sin 2x} dx = \frac{1}{2} \Lambda \frac{q}{p}$ V. T. 89, N. 2.
- 15) $\int e^{-p \cos^2 x} \frac{dx}{\sin^2 x} = \frac{1}{2q} e^{-p/q} \sqrt{\pi}$ V. T. 89, N. 1.
- 16) $\int e^{-p \cos^2 x} \frac{\cos^{2(a-1)} x}{\sin^2 x} dx = \frac{1}{2} \left(\frac{p}{q}\right)^{1/2} e^{-p/q} \sqrt{\frac{\pi}{p}} \cdot \frac{\sum (a-n)^{2n/2}}{1^{a/2}} \left(\frac{1}{4\sqrt{pq}}\right)^a$ V. T. 90, N. 2.

$$17) \int e^{-p Tg^2 x - q^2 \text{Cos}^2 x} \frac{dx}{\text{Cos}^2 x} = \frac{1}{2p} e^{-2pq} \sqrt{\pi} \text{ V. T. 89, N. 1.}$$

$$18) \int e^{-q(Tg^2 x + \text{Cos}^2 x)} \frac{Tg^{2a+1} x}{\text{Sin} 2x} dx = \frac{1}{4} e^{-2q} \sqrt{\frac{\pi^{a+1}}{q} \cdot \sum_0} \frac{1}{(2q)^n} \frac{(a-n+1)^{2n/1}}{2^n 1^{n/1}} \text{ V. T. 81, N. 10.}$$

$$1) \int e^{-p \text{Cos} x} \frac{dx}{\text{Cos} 2x \cdot Tg x} = -\frac{1}{2} \{e^{-p} \text{Ei}(p) + e^p \text{Ei}(-p)\} \text{ V. T. 91, N. 15.}$$

$$2) \int e^{-p \text{Cos} x} \frac{dx}{\text{Sin} 2x \cdot Tg^p x} = \frac{1}{2q^p} \Gamma(p) [p > -1] \text{ V. T. 81, N. 1.}$$

$$3) \int e^{-p \text{Cos}^2 x} \frac{dx}{\text{Sin} 2x \cdot Tg^{2a} x} = \frac{1^{a-1/1}}{4p^a} \text{ V. T. 81, N. 7.}$$

$$4) \int e^{-p \text{Cos}^2 x} \frac{dx}{\text{Sin} x \cdot Tg^{2a+1} x} = \frac{1}{4} \frac{1^{a/2}}{(2p)^a} \sqrt{\frac{\pi}{p}} \text{ V. T. 81, N. 6.}$$

$$5) \int e^{-\text{Cos}^p x} \frac{dx}{\text{Sin} 2x \cdot Tg^q x} = \frac{1}{2p} \Gamma\left(\frac{q}{p}\right) \text{ V. T. 81, N. 8.}$$

$$6) \int e^{-q(Tg^2 x + \text{Cos}^2 x)} \frac{dx}{Tg^{2a+1} x \cdot \text{Sin} 2x} = \frac{1}{4} e^{-2q} \sqrt{\frac{\pi^{a+1}}{q} \cdot \sum_0} \frac{1}{(2q)^n} \frac{(a-n+1)^{2n/1}}{2^n 1^{n/1}} \text{ V. T. 81, N. 10.}$$

$$7) \int \frac{(e^{x/1} \text{Cos} x)^p + (e^{-x/1} \text{Cos} x)^p}{\text{Cos}^2 x + q^2 \text{Sin}^2 x} dx = \frac{\pi}{q} \left(\frac{q}{q+1}\right)^p \text{ (VIII, 611).}$$

$$8) \int \frac{e^{p \text{Cos}^2 x} \text{Cos}(p \text{Sin} 2x)}{\text{Cos}^2 x + q^2 \text{Sin}^2 x} dx = \frac{\pi}{2q} e^{p \frac{q-1}{q+1}} \text{ (IV, 395*)}.$$

$$9) \int \frac{e^{p \text{Sin}^2 x} + e^{-p \text{Sin}^2 x}}{r^2 \text{Cos}^2 x + q^2 \text{Sin}^2 x} \text{Sin}(2p \text{Cos}^2 x) dx = \frac{\pi}{qr} \text{Sin}\left(\frac{2pq}{q+r}\right) \text{ (VIII, 275).}$$

$$10) \int \frac{e^{p \text{Sin}^2 x} + e^{-p \text{Sin}^2 x}}{r^2 \text{Cos}^2 x + q^2 \text{Sin}^2 x} \text{Cos}(2p \text{Cos}^2 x) dx = \frac{\pi}{qr} \text{Cos}\left(\frac{2pq}{q+r}\right) \text{ (VIII, 275).}$$

$$11) \int \frac{e^{-p Tg x}}{\text{Sin} 2x \pm q \text{Cos} 2x \pm q} dx = -\frac{1}{2} e^{\pm pq} \text{Ei}(\mp pq) \text{ V. T. 91, N. 1, 4.}$$

$$12) \int \frac{e^{-p \text{Cos} x}}{\text{Sin} 2x \pm q \text{Cos} 2x \mp q} dx = -\frac{1}{2} e^{\mp pq} \text{Ei}(\pm pq) \text{ V. T. 91, N. 1, 4.}$$

$$13) \int \frac{e^{-p T_9 x} \sin 2x}{(1-q^2) - 2q^2 \cos 2x - (1+q^2) \cos^2 2x} dx = -\frac{1}{4} \{e^{-p q} Ei(pq) + e^{p q} Ei(-pq)\}$$

V. T. 273, N. 11.

$$14) \int \frac{e^{-p C_9 x} \sin 2x}{(1-q^2) + 2q^2 \cos 2x - (1+q^2) \cos^2 2x} dx = -\frac{1}{4} \{e^{-p q} Ei(pq) + e^{p q} Ei(-pq)\}$$

V. T. 273, N. 12.

$$1) \int \frac{dx}{e^{\frac{1}{2}\pi T_9 x} + e^{-\frac{1}{2}\pi T_9 x}} = \frac{1}{2\sqrt{2}} \left\{ \pi - \ell \frac{\sqrt{2}+1}{\sqrt{2}-1} \right\} \text{ V. T. 97, N. 3.}$$

$$2) \int \frac{dx}{e^{\frac{1}{2}\pi T_9 x} + e^{-\frac{1}{2}\pi T_9 x}} = \frac{1}{2} \ell 2 \text{ V. T. 97, N. 2.}$$

$$3) \int \frac{dx}{e^{\pi T_9 x} + e^{-\pi T_9 x}} = \frac{4-\pi}{4} \text{ V. T. 97, N. 1.}$$

$$4) \int \frac{T_9 x}{e^{\frac{1}{2}\pi T_9 x} - e^{-\frac{1}{2}\pi T_9 x}} dx = \frac{\pi}{4} \sqrt{2} - 1 + \frac{1}{4} \sqrt{2} \cdot \ell \frac{\sqrt{2}+1}{\sqrt{2}-1} \text{ V. T. 97, N. 9.}$$

$$5) \int \frac{T_9 x}{e^{\frac{1}{2}\pi T_9 x} - e^{-\frac{1}{2}\pi T_9 x}} dx = \frac{\pi-2}{4} \text{ V. T. 97, N. 8.}$$

$$6) \int \frac{T_9 x}{e^{\pi T_9 x} - e^{-\pi T_9 x}} dx = \frac{1}{2} \left(-\frac{1}{2} + \ell 2 \right) \text{ V. T. 97, N. 7.}$$

$$7) \int \frac{T_9 x}{e^{\frac{1}{2}\pi T_9 x} - 1} dx = \frac{1}{2} \Lambda - \frac{1}{4} \text{ V. T. 97, N. 14.}$$

$$8) \int \frac{T_9 x}{e^{\frac{1}{2}\pi T_9 x} - 1} dx = \frac{1}{2} \ell q + \frac{1}{4q} - \frac{1}{2} Z'(q+1) \text{ V. T. 97, N. 15.}$$

$$9) \int \frac{e^{p T_9 x} - e^{-p T_9 x}}{e^{\pi T_9 x} - e^{-\pi T_9 x}} dx = -\frac{1}{2} p \cos p + \frac{1}{2} \sin p \cdot \ell \{2(1+\cos p)\} [0 < p \leq \pi] \text{ V. T. 97, N. 10.}$$

$$10) \int \frac{e^{p T_9 x} + e^{-p T_9 x}}{e^{\frac{1}{2}\pi T_9 x} - e^{-\frac{1}{2}\pi T_9 x}} T_9 x dx = -1 + \frac{\pi}{2} \cos p + \frac{1}{2} \sin p \cdot \ell \frac{1+\sin p}{1-\sin p} \left[0 \leq p \leq \frac{\pi}{2} \right] \text{ V. T. 97, N. 13.}$$

$$11) \int \frac{e^{p T_9 x} - e^{-p T_9 x}}{e^{\frac{1}{2}\pi T_9 x} - e^{-\frac{1}{2}\pi T_9 x}} dx = \frac{\pi}{2} \sin p - \frac{1}{2} \cos p \cdot \ell \frac{1+\sin p}{1-\sin p} \left[0 \leq p \leq \frac{\pi}{2} \right] \text{ V. T. 97, N. 11.}$$

$$12) \int \frac{e^{p T_9 x} + e^{-p T_9 x}}{e^{\pi T_9 x} - e^{-\pi T_9 x}} T_9 x dx = \frac{1}{2} (p \sin p - 1) + \frac{1}{2} \cos p \cdot \ell \{2(1+\cos p)\} [0 < p < \pi] \text{ V. T. 97, N. 12.}$$

$$13) \int \frac{e^{(r-p)T_g x} - e^{(p-r)T_g x}}{e^{rT_g x} - e^{-rT_g x}} dx = \pi \sum_1^{\infty} \frac{\sin \frac{np\pi}{r}}{n\pi + r} [p^2 < r^2] \text{ V. T. 97, N. 18.}$$

$$14) \int \frac{e^{(r-p)T_g x} + e^{(p-r)T_g x}}{e^{rT_g x} - e^{-rT_g x}} T_g x dx = \frac{\pi}{2r} + \pi \sum_1^{\infty} \frac{\cos \frac{np\pi}{r}}{n\pi + r} [p^2 \leq r^2] \text{ V. T. 97, N. 19.}$$

$$1) \int \frac{T_g^q x}{e^{pT_g x} + 1} \frac{dx}{\sin 2x} = \frac{1}{2p^q} \Gamma(q) \sum_0^{\infty} \frac{(-1)^n}{(n+1)^q} \text{ V. T. 83, N. 6.}$$

$$2) \int \frac{T_g^q x}{e^{pT_g x} - 1} \frac{dx}{\sin 2x} = \frac{1}{2p^q} \Gamma(q) \sum_0^{\infty} \frac{1}{(n+1)^q} \text{ V. T. 83, N. 7.}$$

$$3) \int \frac{1}{e^{pT_g x} - 1} \frac{T_g x}{\cos 2x} dx = \frac{\pi^2}{p^2} \sum_0^{\infty} (-1)^n \left(\frac{2\pi}{p}\right)^{2n} \frac{1}{n+1} B_{2n+1} \text{ V. T. 97, N. 21*}.$$

$$4) \int \frac{1}{e^{pT_g x} - 1} \frac{\sin 2x}{\cos^2 2x} dx = \frac{2\pi^2}{p^2} \sum_0^{\infty} (-1)^n \left(\frac{2\pi}{p}\right)^{2n} B_{2n+1} \text{ V. T. 97, N. 23*}.$$

$$5) \int \frac{1}{e^{pT_g x} - 1} \frac{\sin^2 x}{T_g x} dx = \frac{\pi^2}{p^2} \sum_0^{\infty} \left(\frac{2\pi}{p}\right)^{2n} B_{2n+1} \text{ V. T. 97, N. 22*}.$$

$$6) \int \frac{\sin 2ax}{e^{2\pi \cos x} - 1} \frac{dx}{\sin^{2a+1} x} = (-1)^a \frac{2a-1}{4(2a+1)} \quad 7) \int \frac{\sin 2ax}{e^{\pi \cos x} - 1} \frac{dx}{\sin^{2a+1} x} = (-1)^a \frac{a}{2a+1}$$

$$8) \int \frac{\sin 2ax}{e^{\pi \cos x} - e^{-\pi \cos x}} \frac{dx}{\sin^{2a+1} x} = (-1)^a \frac{1}{4}$$

Sur 6) à 8) voyez Catalan, C. R. 54, 1059.

$$9) \int \frac{1}{e^{p \cos x} + 1} \frac{dx}{T_g^q x \cdot \sin 2x} = \frac{1}{2p^q} \Gamma(q) \sum_0^{\infty} \frac{(-1)^n}{(n+1)^q} \text{ V. T. 83, N. 6.}$$

$$10) \int \frac{1}{e^{p \cos x} - 1} \frac{dx}{T_g^q x \cdot \sin 2x} = \frac{1}{2p^q} \Gamma(q) \sum_0^{\infty} \frac{1}{(n+1)^q} \text{ V. T. 83, N. 7.}$$

$$11) \int \frac{e^{-pT_g x} - e^{-qT_g x}}{e^{-T_g x} + 1} \frac{dx}{\sin 2x} = \frac{1}{2} \frac{\Gamma\left(\frac{1}{2}p\right) \Gamma\left(\frac{q+1}{2}\right)}{\Gamma\left(\frac{1}{2}q\right) \Gamma\left(\frac{p+1}{2}\right)} \text{ V. T. 93, N. 6.}$$

$$12) \int \frac{e^{qT_g x} - e^{-qT_g x}}{e^{pT_g x} + e^{-pT_g x}} \frac{dx}{\sin 2x} = \frac{1}{2} \frac{1}{T_g} \left\{ \frac{p+q}{4p} \pi \right\} \text{ V. T. 95, N. 3.}$$

$$13) \int \frac{(e^{qTyx} - e^{-qTyx})^2}{e^{Tyx} + 1} \frac{dx}{\sin 2x} = -\frac{1}{2} l(q\pi \operatorname{Cot} q\pi) \text{ V. T. 98, N. 9.}$$

$$14) \int \frac{(e^{qTyx} - e^{-qTyx})^2}{e^{pTyx} - e^{-pTyx}} \frac{dx}{\sin 2x} = \frac{1}{2} l \operatorname{Sec} \frac{q\pi}{p} \text{ V. T. 95, N. 5.}$$

$$15) \int \frac{\sin\left(\frac{\pi}{b} \sin x\right) \cdot \sin\{(2a-1)x\}}{e^{\frac{\pi}{b} \cos x} + 2 \cos\left(\frac{\pi}{b} \sin x\right) + e^{-\frac{\pi}{b} \cos x}} dx = \frac{(-1)^{a-1}}{1^{2a-1/1}} \frac{2^{2a}-1}{8a} b \left(\frac{\pi}{b}\right)^{2a} B_{2a-1} \text{ (IV, 391).}$$

$$16) \int \frac{e^{\frac{\pi}{b} \cos x} - e^{-\frac{\pi}{b} \cos x}}{e^{\frac{\pi}{b} \cos x} + 2 \cos\left(\frac{\pi}{b} \sin x\right) + e^{-\frac{\pi}{b} \cos x}} \sin\left(\frac{\pi}{b} \sin x\right) \cdot \sin 2ax dx = \frac{(-1)^{a-1}}{4} \frac{b}{1^{2a/1}} \left(\frac{\pi}{b}\right)^{2a+1} B_{2a} \text{ (IV, 391).}$$

$$17) \int \frac{e^{\frac{\pi}{b} \cos x} + e^{-\frac{\pi}{b} \cos x}}{e^{\frac{\pi}{b} \cos x} + 2 \cos\left(\frac{\pi}{b} \sin x\right) + e^{-\frac{\pi}{b} \cos x}} \cos\left(\frac{\pi}{b} \sin x\right) dx = \frac{1}{2} \pi \text{ (IV, 391).}$$

$$18) \int \frac{e^{\frac{\pi}{b} \cos x} - e^{-\frac{\pi}{b} \cos x}}{e^{\frac{\pi}{b} \cos x} + 2 \cos\left(\frac{\pi}{b} \sin x\right) + e^{-\frac{\pi}{b} \cos x}} \cos\{(2a-1)x\} dx = \frac{(-1)^{a-1}}{1^{2a-1/1}} \frac{2^{2a}-1}{8a} b \left(\frac{\pi}{b}\right)^{2a} B_{2a-1} \text{ (IV, 391).}$$

$$19) \int \frac{e^{\frac{\pi}{b} \cos x} + e^{-\frac{\pi}{b} \cos x}}{e^{\frac{\pi}{b} \cos x} + 2 \cos\left(\frac{\pi}{b} \sin x\right) + e^{-\frac{\pi}{b} \cos x}} \cos\left(\frac{\pi}{b} \sin x\right) \cdot \cos 2ax dx = \frac{(-1)^a}{4} \frac{b}{1^{2a/1}} \left(\frac{\pi}{b}\right)^{2a+1} B_{2a} \text{ (IV, 391).}$$

$$20) \int \frac{T_y^q x}{e^{Tyx} + e^{-Tyx} + 2 \cos \lambda} \frac{dx}{\sin 2x} = \frac{\Gamma(q)}{2 \sin \lambda} \sum_1^{\infty} (-1)^{n-1} \frac{\sin n\lambda}{n^q} \text{ V. T. 96, N. 4.}$$

$$21) \int \frac{\sin 2x \cdot \sin^{2a+2} x - \sin^2 x \cdot \sin\{(4a+2)x\} + \sin 4ax}{1 - 2 \cos 2x \cdot \sin^2 x + \sin^4 x} \frac{dx}{(e^{2x \cos x} - 1) \sin^{2a+2} x} = \frac{1}{4} \sum_1^a \left(\frac{4n-3}{4n-1} - \frac{4n-1}{4n+1} \right) \text{ Catalan, C. R. 54, 1059.}$$

$$1) \int e^{-Tyx} \frac{\operatorname{Tang}^q x}{\cos x \cdot \sqrt{\sin 2x}} dx = \frac{1^{q/2}}{(2q)^q} \sqrt{\frac{\pi}{2q}} \text{ V. T. 98, N. 2.}$$

$$2) \int e^{-\frac{1}{q} \operatorname{Cosec}^2 x} \frac{\sqrt{\sin 2x}}{\cos^2 x} dx = \frac{1+q}{\sqrt{e}} 2 \sqrt{q\pi} \text{ V. T. 98, N. 3.}$$

$$3) \int e^{-q T_g x} \frac{dx}{\cos x \cdot \sqrt{\sin 2x}} = \sqrt{\frac{\pi}{2q}} \text{ V. T. 98, N. 10.}$$

$$4) \int e^{-\frac{1}{q} \operatorname{Cosec} 2x} \frac{dx}{\cos x \cdot \sqrt{\sin 2x}} = \frac{\sqrt{q\pi}}{\sqrt[4]{e}} \text{ V. T. 98, N. 12.}$$

$$5) \int e^{-\frac{1}{q} \operatorname{Cosec} 2x} \frac{T_g^p x}{\sin x \cdot \sqrt{\sin 2x}} dx = \frac{\sqrt{\pi q}}{\sqrt[4]{e}} \sum_0^{\infty} \frac{(p-n)^{2n/1}}{2^{n/2}} q^n \text{ V. T. 98, N. 17.}$$

$$6) \int e^{-\frac{1}{q} \operatorname{Cosec} 2x} \frac{dx}{\cos x \cdot T_g^p x \cdot \sqrt{\sin 2x}} = \frac{\sqrt{2\pi q}}{\sqrt[4]{e}} \sum_0^{\infty} \frac{(p-n)^{2n/1}}{2^{n/2}} q^n \text{ V. T. 98, N. 17.}$$

$$7) \int e^{-\frac{1}{q} \operatorname{Cosec} x} \frac{dx}{T_g x \cdot \sqrt{\sin x \cdot (1 - \sin x)}} = \frac{\sqrt{q\pi}}{\sqrt[4]{e}} \text{ V. T. 104, N. 11.}$$

$$8) \int e^{-\frac{1}{q} \sec x} \frac{T_g x}{\sqrt{\cos x \cdot (1 - \cos x)}} dx = \frac{\sqrt{q\pi}}{\sqrt[4]{e}} \text{ V. T. 104, N. 11.}$$

$$9) \int e^{-q^2 (T_g x + \cot x)} \frac{dx}{\cos x \cdot \sqrt{\sin 2x}} = \frac{1}{2q} e^{-q^2} \sqrt{2\pi} \text{ V. T. 98, N. 12.}$$

$$10) \int e^{-p T_g x - q \cot x} \frac{dx}{\cos x \cdot \sqrt{\sin 2x}} = e^{-2\sqrt{pq}} \sqrt{\frac{\pi}{2p}} \text{ V. T. 98, N. 15.}$$

$$11) \int e^{-q^2 (T_g x + \cot x)} \frac{dx}{\sin x \cdot \sqrt{\sin 2x}} = \frac{1}{2q} e^{-q^2} \sqrt{2\pi} \text{ V. T. 98, N. 12.}$$

$$12) \int e^{-p T_g x - q \cot x} \frac{dx}{T_g^a x \cdot \cos x \cdot \sqrt{\sin 2x}} = \left(\frac{p}{q}\right)^{\frac{1}{2}a} e^{-2\sqrt{pq}} \sqrt{\frac{\pi}{2p}} \sum_0^{\infty} \frac{(a-n)^{2n/1}}{2^{n/2} (2\sqrt{pq})^n} \text{ V. T. 98, N. 17.}$$

$$13) \int \frac{1}{e^{T_g x} + e^{-T_g x}} \frac{dx}{\cos x \cdot \sqrt{\sin 2x}} = \sqrt{\frac{\pi}{2}} \sum_0^{\infty} \frac{(-1)^n}{\sqrt{2n+1}} \text{ V. T. 98, N. 25.}$$

$$14) \int \frac{1}{e^{T_g x} + e^{-T_g x} + 1} \frac{dx}{\cos x \cdot \sqrt{\sin 2x}} = \frac{\sqrt{2\pi}}{2 \sin \frac{1}{2} \pi} \sum_1^{\infty} (-1)^{n-1} \frac{\sin \frac{1}{2} n \pi}{\sqrt{n}} \text{ V. T. 98, N. 26.}$$

$$1) \int e^{ax} \sin^b x dx = \frac{\pi}{2^b} \frac{e^{\frac{1}{2} a \pi} 1^{b/1}}{\Gamma\left(\frac{a+bi}{2} + 1\right) \Gamma\left(\frac{a-bi}{2} + 1\right)} \text{ (IV, 394).}$$

$$2) \int e^{2 \operatorname{Cosec} x} dx = \pi \sum_0^{\infty} \frac{1}{(1^{n/1})^2}$$

$$3) \int e^{2 \operatorname{Cosec} x} \cos x dx = \pi \sum_0^{\infty} \frac{1}{1^{n/1} 1^{n+1/1}}$$

Sur 2) et 3) voyez Spitzer, Gr. 25, 137.

- 4) $\int e^{p \cos x} \cos(p \sin x) dx = \pi [p^2 \leq 1]$ (VIII, 276).
 - 5) $\int e^{p \cos x} \sin(2x + p \sin x) dx = \frac{1}{p^2} \{ (p-1)e^p + (p+1)e^{-p} \}$ Vernier, A. M. 15, 165.
 - 6) $\int e^{p \cos x} \cos(ax + p \sin x) dx = 0$ V. T. 277, N. 7, 8.
 - 7) $\int e^{p \cos x} \sin(p \sin x) \cdot \sin ax dx = \frac{\pi}{2} \frac{p^a}{1^{a/2}} \text{ (VIII, 276).}$
 - 8) $\int e^{p \cos x} \cos(p \sin x) \cdot \cos ax dx = \frac{\pi}{2} \frac{p^a}{1^{a/2}} \text{ (VIII, 276).}$
 - 9) $\int e^{p \cos x} \cos(ax - p \sin x) dx = \frac{p^a \pi}{1^{a/2}}$ V. T. 277, N. 7, 8.
 - 10) $\int e^{p \cos x} \cdot \cos \lambda \sin(p \cos x \cdot \sin \lambda) dx = \sum_1^{\infty} \frac{\sin 2n\lambda}{(1^{n/2})^2} \left(\frac{p}{2}\right)^{2n}$
 - 11) $\int e^{p \cos x} \cdot \cos \lambda \cos(p \cos x \cdot \sin \lambda) dx = \sum_0^{\infty} \frac{\cos 2n\lambda}{(1^{n/2})^2} \left(\frac{p}{2}\right)^{2n}$
 - 12) $\int e^{p \cos x} \cdot \cos \lambda \cos x \cdot \sin(p \cos x \cdot \sin \lambda) dx = \sum_0^{\infty} \frac{\sin \{(2n+1)\lambda\}}{1^{n/2} 1^{n+1/2}} \left(\frac{p}{2}\right)^{2n+1}$
 - 13) $\int e^{p \cos x} \cdot \cos \lambda \cos x \cdot \cos(p \cos x \cdot \sin \lambda) dx = \sum_0^{\infty} \frac{\cos \{(2n+1)\lambda\}}{1^{n/2} 1^{n+1/2}} \left(\frac{p}{2}\right)^{2n+1}$
- Sur 10) à 13) voyez Spitzer, Schl. Z. 8, 292.
- 14) $\int e^{r(\cos p x + \cos q x)} \sin(r \sin p x) \cdot \sin(r \sin q x) dx = \frac{\pi}{2} \sum_1^{\infty} \frac{1}{1^{p n/2}} \frac{1}{1^{q n/2}} r^{(p+q)n} \text{ (VIII, 634).}$
 - 15) $\int e^{r(\cos p x + \cos q x)} \cos(r \sin p x) \cdot \cos(r \sin q x) dx = \frac{\pi}{2} \left\{ 2 + \sum_1^{\infty} \frac{1}{1^{p n/2}} \frac{1}{1^{q n/2}} r^{(p+q)n} \right\} \text{ (VIII, 634).}$
 - 16) $\int e^{p^a \cos ax + q^b \cos bx} \sin(p^a \sin ax) \cdot \sin(q^b \sin bx) dx = \frac{\pi}{2} \sum_1^{\infty} \frac{1}{1^{a n/2}} \frac{1}{1^{b n/2}} (pq)^{a b n} \text{ (VIII, 634).}$
 - 17) $\int e^{p^a \cos ax + q^b \cos bx} \cos(p^a \sin ax) \cdot \cos(q^b \sin bx) dx = \pi + \frac{\pi}{2} \sum_1^{\infty} \frac{1}{1^{a n/2}} \frac{1}{1^{b n/2}} (pq)^{a b n} \text{ (VIII, 634).}$
 - 18) $\int e^{p^a \cos ax + q^b \cos bx} \cos(p^a \sin ax + q^b \sin bx) dx = \pi$ V. T. 277, N. 16, 17.
 - 19) $\int e^{p^a \cos ax + q^b \cos bx} \cos(p^a \sin ax - q^b \sin bx) dx = \pi \left\{ 1 + \sum_1^{\infty} \frac{1}{1^{a n/2}} \frac{1}{1^{b n/2}} (pq)^{a b n} \right\}$

V. T. 277, N. 16, 17.

$$20) \int (e^{p \sin x} + e^{-p \sin x}) \{ e^{q \sin x} \sin(x + q \cos x) - e^{-q \sin x} \sin(x - q \cos x) \} \cos(p \cos x) dx = \\ = 2q\pi \left\{ 2 + \sum_1^{\infty} \frac{(pq)^{2n}}{(2n+1) \{1^{2n/1}\}^2} \right\} \text{ (VIII, 633).}$$

$$21) \int (e^{p \sin x} - e^{-p \sin x}) \{ e^{q \sin x} \cos(x + q \cos x) - e^{-q \sin x} \cos(x - q \cos x) \} \sin(p \cos x) dx = \\ = 2q\pi \sum_1^{\infty} \frac{(pq)^{2n}}{(2n+1) \{1^{2n/1}\}^2} \text{ (VIII, 633).}$$

$$1) \int e^{p \cos x} \sin(p \sin x) \frac{dx}{\sin x} = \frac{\pi}{2} (e^p - e^{-p}) \text{ (VIII, 562).}$$

$$2) \int e^{p \cos x} \cos(p \sin x) \frac{dx}{\cos x} = \infty \text{ (VIII, 563).}$$

$$3) \int e^{p \cos x} \cos(p \sin x) \frac{\sin 2ax}{\sin x} dx = \frac{\pi}{p} \sum \frac{p^{2a-n}}{1^{2a-1n-1/1}} \text{ Vernier, A. M. 15, 165.}$$

$$4) \int \frac{e^{p \cos x} \cos(p \sin x)}{(1+q^2) + (1-q^2) \cos x} dx = \frac{\pi}{2q} e^{p \frac{q-1}{q+1}} \text{ (IV, 395*)}.}$$

$$5) \int \frac{e^{p \sin x} + e^{-p \sin x}}{s - t \cos x} \sin(p \cos x) dx = \frac{\pi}{2 \sqrt{s^2 - t^2}} \sin \left\{ p \frac{s - \sqrt{s^2 - t^2}}{2t} \right\} [s > t] \text{ (VIII, 275).}$$

$$6) \int \frac{e^{p \sin x} + e^{-p \sin x}}{s - t \cos x} \cos(p \cos x) dx = \frac{\pi}{2 \sqrt{s^2 - t^2}} \cos \left\{ p \frac{s - \sqrt{s^2 - t^2}}{2t} \right\} [s > t] \text{ (VIII, 275).}$$

$$7) \int e^{p \cos rx} \frac{\sin(p \sin rx) \cdot \sin rx}{p^2 - 2pq \cos rx + q^2} dx = \frac{\pi}{2pqr} (e^q - 1) [p^2 > q^2] \text{ (VIII, 559*)}.}$$

$$8) \int e^{p \cos rx} \frac{\cos(p \sin rx)}{p^2 - 2pq \cos rx + q^2} dx = \frac{1}{p^2 - q^2} \frac{\pi}{r} e^q [p^2 > q^2] \text{ (VIII, 560).}$$

$$9) \int e^{p \cos rx} \frac{\sin x}{p^2 - 2pq \cos x + q^2} \sin(p \sin rx) dx = \frac{\pi}{2pq} (e^{qr} - 1) \text{ (VIII, 634).}$$

$$10) \int e^{p \cos rx} \frac{p - q \cos x}{p^2 - 2pq \cos x + q^2} \cos(p \sin rx) dx = \frac{\pi}{2p} (e^{qr} + 1) \text{ (VIII, 634).}$$

$$11) \int \frac{e^{p \sin rx} - e^{-p \sin rx}}{p^2 - 2pq \cos x + q^2} \sin x \cdot \sin(p \cos rx) dx = \frac{\pi}{pq} (\cos qr - 1) \text{ (VIII, 634).}$$

- $$12) \int \frac{e^{p \sin r x} - e^{-p \sin r x}}{p^2 - 2 p q \cos x + q^2} \sin x \cdot \cos(p \cos r x) dx = \frac{\pi}{p q} \sin q r \text{ (VIII, 634).}$$
- $$13) \int \frac{e^{p \sin r x} + e^{-p \sin r x}}{p^2 - 2 p q \cos x + q^2} (p - q \cos x) \sin(p \cos r x) dx = \frac{\pi}{q} \sin q r \text{ (VIII, 634).}$$
- $$14) \int \frac{e^{p \sin r x} + e^{-p \sin r x}}{p^2 - 2 p q \cos x + q^2} (p - q \cos x) \cos(p \cos r x) dx = \frac{\pi}{p} (\cos q r + 1) \text{ (VIII, 633).}$$
- $$15) \int e^{q \cos x} \frac{\sin r x}{1 - 2 p^r \cos r x + p^{2r}} \sin(q \sin x) dx = \frac{\pi}{2 p^r} \sum_{n=1}^{\infty} \frac{1}{1^{n r/1}} (p q)^{n r} \text{ (VIII, 635).}$$
- $$16) \int e^{q \cos x} \frac{1 - p^r \cos r x}{1 - 2 p^r \cos r x + p^{2r}} \cos(q \sin x) dx = \frac{\pi}{2} \left\{ 2 + \sum_{n=1}^{\infty} \frac{1}{1^{n r/1}} (p q)^{n r} \right\} \text{ (VIII, 635).}$$
- $$17) \int \frac{\sin \frac{1}{2} x - p e^{\cos x} \sin(\frac{1}{2} x - \sin x)}{1 - 2 p e^{\cos x} \cos(x - \sin x) + p^2 e^{2 \cos x}} \sin \frac{1}{2} x dx = \frac{\pi}{2} \sum_{n=1}^{\infty} \frac{n^{n-1}}{1^{n/1}} p^n \text{ (IV, 396).}$$

- $$1) \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} e^{T x} \frac{T y x}{(\sin x + \cos x)^2} dx = \frac{1}{2} e - 1 \text{ V. T. 80, N. 6.}$$
- $$2) \int_{-\frac{1}{2} \pi}^{\frac{1}{2} \pi} e^{-q \sin x - \sqrt{1 - \cos^2 x}} \cos\{q \cos x \cdot \sqrt{2 \cos 2x} - x\} \frac{dx}{\sqrt{2 \cos 2x}} = \pi \cos q \text{ (IV, 516*)}.}$$
- $$3) \int_{\frac{\pi}{4}}^{\frac{3\pi}{4}} e^{\cos x} \frac{dx}{(\sin x + \cos x)^2 T y x} = \frac{1}{2} e - 1 \text{ V. T. 80, N. 6.}$$
- $$4) \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} e^{-p x} \cos^{2a} x dx = \frac{1^{1 a/1}}{(p^2 + 1^2)(p^2 + 4^2) \dots (p^2 + 4 a^2)} \frac{1}{p} (e^{\frac{1}{2} p \pi} - e^{-\frac{1}{2} p \pi}) \text{ V. T. 279, N. 19.}$$
- $$5) \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} e^{-p x} \cos^{2a+1} x dx = \frac{1^{1 a+1/1}}{(p^2 + 1^2)(p^2 + 3^2) \dots (p^2 + (2a+1)^2)} (e^{\frac{1}{2} p \pi} + e^{-\frac{1}{2} p \pi}) \text{ V. T. 279, N. 20.}$$
- $$6) \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} e^{(1 q + r) x} \cos^r x dx = \frac{1}{2^r} \sin q \pi \frac{\Gamma(q) \Gamma(r+1)}{\Gamma(q+r+1)} \text{ (VIII, 420).}$$
- $$7) \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} e^{-(q+1)x - \frac{1}{2} r e^{-x}} \sin x \cos^{q-1} x dx = \frac{\pi r^q}{2^{q-1} e^r \Gamma(q+1)} \text{ (IV, 396*)}.}$$
- $$8) \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} e^{(1 p - q + 1)x + 2 i \cos x \cdot n x} \cos^{q-1} x dx = \frac{\pi}{2^{q-1}} \frac{\Gamma(q)}{\Gamma(p) \Gamma(q-p+1)} \sum_{n=1}^{\infty} \frac{q^{n-1}}{p^{n-1}} \frac{1}{1^{n/1}}$$

$$9) \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} e^{px} (e^{q \cos x} + e^{-q \cos x}) dx = 2(e^{\frac{1}{2}p\pi} - e^{-\frac{1}{2}p\pi}) \sum_{n=0}^{\infty} \frac{q^{2n-1}}{(p^2+2^2)(p^2+4^2)\dots(p^2+2n^2)}$$

$$10) \int_{-\pi}^{\pi} e^{s \cos x + (a-1)x + q e^{x i}} \cos(s \sin x) dx = \frac{\pi s^{a-1}}{1^{a-1/1}} \sum_{n=0}^{\infty} \frac{(2q)^n}{1^{n/1} p^{n/1}}$$

Sur 8) à 10) voyez Russell, Phil. Trans. 1855.

$$11) \int_{-\pi}^{\pi} \frac{(1-e^{-x i})(p+e^{-x i})}{1-q e^{p+\cos x} e^{(x-\sin x)i}} dx = 2\pi \left\{ p + \sum_{n=1}^{\infty} \frac{n^{n-1}}{1^{n/1}} q^n e^{np} \right\} \text{ (IV, 397).}$$

$$12) \int_{-\pi}^{\pi} \frac{e^{-\frac{1}{2}x i} \sin \frac{1}{2}x}{1-q e^{p+\cos x} e^{(x-\sin x)i}} dx = \frac{\pi}{i} - p + \left\{ \sum_{n=1}^{\infty} \frac{n^{n-1}}{1^{n/1}} q^n e^{np} \right\} \text{ (IV, 398*)}.$$

$$13) \int_{-\pi}^{\pi} \frac{e^{q \sin x} \sin \{(2a+1)x\} - \sin \{(2a+1)x - q \cos x\}}{e^{q \sin x} - 2 \cos(q \cos x) + e^{-q \sin x}} dx = \left(\frac{q}{2\pi}\right)^{2a+1} \sum_{n=1}^b n^{2a} \text{ (IV, 398).}$$

$$14) \int_{-\pi}^{\pi} \frac{e^{q \sin x} \sin \left\{ x + \frac{aq}{4\pi^2} \sin 2x \right\} - \sin \left\{ x + \frac{aq}{4\pi^2} \sin 2x - q \cos x \right\}}{e^{q \sin x} - 2 \cos(q \cos x) + e^{-q \sin x}} e^{\frac{aq}{4\pi^2} \cos 2x} dx =$$

$$= \frac{2\pi}{q} \left\{ \frac{1}{2} + \sum_{n=1}^b e^{n^2 a} \right\} \text{ Dans 13) et 14) on a } b = \mathcal{C} \frac{2\pi}{q} \text{ (IV, 398).}$$

$$15) \int_0^{2\pi} e^{px i} \sin qx dx = 0 [p \geq q] = \pi i [p = q] \text{ (VIII, 335).}$$

$$16) \int_0^{2\pi} e^{px i} \cos qx dx = 0 [p \geq q] = \pi [p = q] \text{ (VIII, 335).}$$

$$17) \int_{-b\pi}^{c\pi} e^{-px} \sin^{2a} x dx = \frac{1^{2a/1}}{(2^2+p^2)(4^2+p^2)\dots(4a^2+p^2)} \frac{1}{p} (e^{bp\pi} - e^{-cp\pi}) \text{ (VIII, 250).}$$

$$18) \int_{-b\pi}^{c\pi} e^{-px} \sin^{2a+1} x dx = \frac{1^{2a+1/1}}{(1^2+p^2)(3^2+p^2)\dots\{(2a+1)^2+p^2\}} \{e^{bp\pi} \cos b\pi - e^{-cp\pi} \cos c\pi\}$$

(VIII, 250).

$$19) \int_{(\frac{1}{2}-b)\pi}^{(c+\frac{1}{2})\pi} e^{-px} \cos^{2a} x dx = \frac{1^{2a/1}}{(2^2+p^2)(4^2+p^2)\dots(4a^2+p^2)} \frac{1}{p} \{e^{(b-\frac{1}{2})p\pi} - e^{-(c+\frac{1}{2})p\pi}\} \text{ (VIII, 250).}$$

$$20) \int_{(\frac{1}{2}-b)\pi}^{(c+\frac{1}{2})\pi} e^{-px} \cos^{2a+1} x dx = \frac{1^{2a+1/1}}{(1^2+p^2)(3^2+p^2)\dots\{(2a+1)^2+p^2\}} \{e^{-(c+\frac{1}{2})p\pi} \cos c\pi -$$

$$- e^{(b-\frac{1}{2})p\pi} \cos b\pi\} \text{ (VIII, 250).}$$

- 1) $\int_0^1 q^x \sin p x dx = \frac{-p q \cos p + q \sin p \cdot l q + p}{p^2 + (l q)^2}$ (VIII, 248).
- 2) $\int_0^1 q^x \cos p x dx = \frac{p q \sin p + q \cos p \cdot l q - l q}{p^2 + (l q)^2}$ (VIII, 249).
- 3) $\int_0^1 \frac{e^{\frac{\pi}{p} \sqrt{1-x^2}} - e^{-\frac{\pi}{p} \sqrt{1-x^2}}}{e^{\frac{\pi}{p} \sqrt{1-x^2}} + e^{-\frac{\pi}{p} \sqrt{1-x^2}} + 2 \cos \left(\frac{\pi}{p} x \right)} dx = \frac{\pi^2}{16p}$ V. T. 275, N. 18.
- 4) $\int_0^1 \frac{\sin \left\{ \frac{\pi}{p} \sqrt{1-x^2} \right\}}{e^{\frac{\pi}{p} x} + e^{-\frac{\pi}{p} x} + 2 \cos \left\{ \frac{\pi}{p} \sqrt{1-x^2} \right\}} dx = \frac{\pi^2}{16p}$ V. T. 275, N. 15.
- 5) $\int_{\frac{\pi}{2}}^{\infty} e^{-p x} \sin^{2a} x dx = \frac{1^{2a+1}}{(2^2+p^2)(4^2+p^2)\dots(4a^2+p^2)} \frac{1}{p} e^{-\frac{1}{2}p\pi} \left\{ 1 + \frac{p^2}{1.2} + \frac{p^2(2^2+p^2)}{1^{2/1}} + \dots + \frac{p^2(2^2+p^2)\dots\{(2a-2)^2+p^2\}}{1^{2a+1}} \right\}$ (VIII, 252).
- 6) $\int_{\frac{\pi}{2}}^{\infty} e^{-p x} \sin^{2a+1} x dx = \frac{1^{2a+1/1}}{(1^2+p^2)(3^2+p^2)\dots\{(2a+1)^2+p^2\}} p e^{-\frac{1}{2}p\pi} \left\{ 1 + \frac{1^2+p^2}{1.2.3} + \frac{(1^2+p^2)(3^2+p^2)}{1^{2/1}} + \dots + \frac{(1^2+p^2)(3^2+p^2)\dots\{(2a-1)^2+p^2\}}{1^{2a+1/1}} \right\}$ (VIII, 252).
- 7) $\int_{\frac{\pi}{2}}^{\infty} e^{-p x} \cos^{2a} x dx = \frac{1^{2a+1}}{(2^2+p^2)(4^2+p^2)\dots(4a^2+p^2)} \frac{1}{p} e^{-\frac{1}{2}p\pi}$ (VIII, 249).
- 8) $\int_{\frac{\pi}{2}}^{\infty} e^{-p x} \cos^{2a+1} x dx = \frac{-1^{2a+1/1}}{(1^2+p^2)(3^2+p^2)\dots\{(2a+1)^2+p^2\}} e^{-\frac{1}{2}p\pi}$ (VIII, 250).
- 9) $\int_{-\frac{\pi}{2}}^{\infty} e^{-p x} \cos^{2a} x dx = \frac{1^{2a+1}}{(2^2+p^2)(4^2+p^2)\dots(4a^2+p^2)} \frac{1}{p} e^{\frac{1}{2}p\pi}$ (VIII, 699*).
- 10) $\int_{-\frac{\pi}{2}}^{\infty} e^{-p x} \cos^{2a+1} x dx = \frac{1^{2a+1/1}}{(1^2+p^2)(3^2+p^2)\dots\{(2a+1)^2+p^2\}} e^{\frac{1}{2}p\pi}$ (VIII, 699*).

- 1) $\int_0^{\infty} e^{-\frac{1}{k}x} \sin q x \cdot \sin r x dx = \frac{1}{2} \frac{k}{1 + (q-r)^2 k^2}$ (IV, 375).
- 2) $\int_0^{\infty} e^{-\frac{1}{k}x} \cos q x \cdot \cos r x dx = \frac{1}{2} \frac{k}{1 + (q-r)^2 k^2}$ (IV, 375).

$$3) \int_0^{\infty} e^{-px} \frac{\sin \{(2k+1)x\}}{\sin x} dx = \frac{\pi}{2} \frac{1 + e^{-p\pi}}{1 - e^{-p\pi}} \quad (\text{IV, 382}).$$

$$4) \int_0^{\infty} e^{-px} \frac{\cos \{(2k+1)x\}}{\sin x} dx = (-1)^p \pi \frac{e^{-\frac{1}{2}p\pi}}{1 - e^{-p\pi}} \quad (\text{IV, 382}).$$

$$5) \int_0^{\infty} e^{-px} \frac{\cos \{(2k+1)x\}}{\sin x} \sin x dx = \frac{\pi e^{-\frac{1}{2}p\pi}}{1 + e^{-p\pi}} \quad (\text{IV, 382}).$$

$$6) \int_0^{\frac{\pi}{2}} \frac{\sin 2x \cdot \sin^{4k+2} x - \sin^2 x \cdot \sin \{(4k+2)x\} + \sin 4kx}{1 - 2 \cos 2x \cdot \sin^2 x + \sin^4 x} \frac{dx}{(e^{2\pi \cos x} - 1) \sin^{4k+2} x} = \frac{\pi - 2}{16}$$

Catalan, C. R. 54, 1059.

$$7) \int_0^a e^{p \cos x} \sin(p \sin x) \frac{\cos kx}{\sin x} dx = 0 \quad [0 < a < \infty] \quad (\text{VIII, 378}).$$

$$8) \int_0^a e^{p \cos x} \cos(p \sin x) \frac{\cos 2kx}{\cos x} dx = 0 \quad \left[0 < a < \frac{1}{2}\pi\right], = \infty \quad \left[\frac{1}{2}\pi < a < \infty\right] \quad (\text{VIII, 379}).$$

$$9) \int_0^a e^{p \cos x} \cos(p \sin x) \cdot \cos \{(4k \pm 1)x\} \frac{dx}{\cos x} = \pm \frac{\pi}{2} \cos p \left[a = \frac{\pi}{2}\right], = \pm \pi \cos p \left[\frac{\pi}{2} < a < \frac{3\pi}{2}\right], = \\ = \pm \frac{3\pi}{2} \cos p \left[a = \frac{3\pi}{2}\right], = \pm \frac{2b-1}{2} \pi \cos p \left[a = \frac{2b-1}{2} \pi\right], = \pm b \pi \cos p \left[a = \frac{2b-1}{2} \pi + \right. \\ \left. + c, c < \pi\right] \quad (\text{VIII, 379}).$$

$$1) \int_0^{\infty} e^{-px} \operatorname{Arctg} \frac{x}{q} dx = \frac{1}{p} \left\{ \operatorname{Ci}(pq) \cdot \sin pq - \operatorname{Si}(pq) \cdot \cos pq + \frac{\pi}{2} \cos pq \right\} \quad (\text{VIII, 598}).$$

$$2) \int_0^{\infty} e^{-px} \operatorname{Arccot} \frac{x}{q} dx = \frac{1}{p} \left\{ \pi \sin^2 \frac{1}{2} pq - \operatorname{Ci}(pq) \cdot \sin pq + \operatorname{Si}(pq) \cdot \cos pq \right\} \quad (\text{VIII, 598}).$$

$$3) \int_0^{\infty} \operatorname{Arctg} \frac{x}{p} \frac{dx}{e^{2\pi q x} - 1} = \frac{1}{2q} \left\{ \Gamma(pq + 1) - \frac{1}{2} \log pq \pi + pq(1 - \log pq) \right\} \quad \text{V. T. 354, N. 6.}$$

$$4) \int_0^{\infty} \operatorname{Arctg} x \frac{e^{\frac{1}{2}\pi x} - e^{-\frac{1}{2}\pi x}}{(e^{\frac{1}{2}\pi x} + e^{-\frac{1}{2}\pi x})^2} dx = \frac{\sqrt{2}}{\pi} \left\{ \pi - \log \frac{\sqrt{2} + 1}{\sqrt{2} - 1} \right\} \quad \text{V. T. 97, N. 3.}$$

$$5) \int_0^{\infty} \operatorname{Arctg} x \frac{e^{\frac{1}{2}\pi x} - e^{-\frac{1}{2}\pi x}}{(e^{\frac{1}{2}\pi x} + e^{-\frac{1}{2}\pi x})^2} dx = \frac{1}{\pi} \log 2 \quad \text{V. T. 97, N. 2.}$$

F. Exponent.;
Circ. Inverse.

TABLE 282, suite.

Lim. diverses.

- 6) $\int_0^{\infty} \operatorname{Arctg} x \frac{e^{\pi x} - e^{-\pi x}}{(e^{\pi x} + e^{-\pi x})^2} dx = \frac{4 - \pi}{4\pi}$ V. T. 97, N. 1.
- 7) $\int_0^{\infty} \operatorname{Arctg} \frac{x}{q} \frac{e^{\pi x} - e^{-\pi x}}{(e^{\pi x} + e^{-\pi x})^2} dx = \frac{1}{4\pi} \left\{ Z' \left(\frac{2q+3}{4} \right) - Z' \left(\frac{2q+1}{4} \right) \right\}$ V. T. 97, N. 4.
- 8) $\int_0^{\infty} \operatorname{Arctg} \frac{x}{q} \frac{e^{px} - e^{-px}}{(e^{px} + e^{-px})^2} dx = \frac{\pi}{p} \sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{2pq + (2n-1)\pi}$ V. T. 97, N. 5.
- 9) $\int_0^{\infty} \{ e^x \operatorname{Arctg}(e^{-x}) - e^{-x} \operatorname{Arctg}(e^x) \} \frac{dx}{e^x - e^{-x}} = \frac{1}{4} \pi$ Cauchy, A. M. 17, 84.
- 10) $\int_{-\infty}^{\infty} \operatorname{Arctg}(e^{-x}) \frac{dx}{(e^{px} + e^{-px})^2} = \frac{\sqrt{\pi^2}}{2^{p+1} p} \frac{\Gamma(p)}{\Gamma(p + \frac{1}{2})}$ (VIII, 422).

F. Exponent.;
Autre Fonction.

TABLE 283.

Lim. 0 et ∞ .

- 1) $\int e^{-x} \operatorname{Li}(e^x) dx = 0$ V. T. 283, N. 3.
- 2) $\int e^{px} \operatorname{Li}(e^{-x}) dx = \frac{1}{p} l(1-p)$ (VIII, 460).
- 3) $\int e^{-px} \operatorname{Li}(e^x) dx = -\frac{1}{p} l(p-1)$ (VIII, 461).
- 4) $\int e^{-px} \operatorname{Li}(e^{-x}) dx = -\frac{1}{p} l(1+p)$ [$p \geq -1$] (VIII, 460).
- 5) $\int e^{-px^2} \operatorname{Li}(e^{-x^2}) dx = -\sqrt{\frac{\pi}{p}} \cdot l\{ \sqrt{p} + \sqrt{1+p} \}$ [$p > 0$] (VIII, 460).
- 6) $\int e^{px^2} \operatorname{Li}(e^{-x^2}) dx = -\sqrt{\frac{\pi}{p}} \operatorname{Arcsin}(\sqrt{p})$ [$p < 1$] (VIII, 460).

F. Logar.;
Circ. Dir.

TABLE 284.

. Lim. 0 et 1.

- 1) $\int \sin px \cdot l x \cdot dx = \sum_{n=0}^{\infty} (-1)^{n-1} \frac{p^{2n+1}}{(2n+1)^2 1^{2n+1/2}} \quad \text{(VIII, 516)}$
- 2) $\int \cos px \cdot l x \cdot dx = -\frac{1}{p} \operatorname{Si}(p) \quad \text{(VIII, 516)}$
- 3) $\int \sin(q l x) dx = -\frac{q}{1+q^2}$ V. T. 261, N. 1.
- 4) $\int \cos(q l x) dx = \frac{1}{1+q^2}$ V. T. 261, N. 2.
- 5) $\int \sin(q l x) \frac{dx}{l x} = \operatorname{Arctg} q$ V. T. 365, N. 1.

- 6) $\int \sin(plx) \cdot \sin(qlx) \frac{dx}{lx} = \frac{1}{4} l \frac{1+(p-q)^2}{1+(p+q)^2}$ V. T. 284, N. 3.
- 7) $\int \sin(plx) \cdot \cos(qlx) \frac{dx}{lx} = \frac{1}{2} \operatorname{Arctg} \left(\frac{2p}{1-p^2+q^2} \right)$ V. T. 284, N. 4.
- 8) $\int \sin^2(plx) \frac{dx}{lx} = -\frac{1}{4} l(1+4p^2)$ V. T. 365, N. 4.
- 9) $\int \{ \cos(plx) - \cos(qlx) \} \frac{dx}{lx} = \frac{1}{2} l \frac{1+p^2}{1+q^2}$ V. T. 284, N. 6.
- 10) $\int \sin(plx) \cdot l l \frac{1}{x} \cdot dx = \frac{1}{1+p^2} \left\{ \operatorname{Arctg} p - pA - \frac{1}{2} p l(1+p^2) \right\}$ V. T. 467, N. 1.
- 11) $\int \cos(plx) \cdot l l x \cdot dx = -\frac{1}{1+p^2} \left\{ \frac{1}{2} l(1+p^2) + p \operatorname{Arctg} p + A \right\}$ V. T. 467, N. 2.
- 12) $\int \sin^2(plx) \cdot l l x \cdot dx = \frac{1}{1+4p^2} \left\{ 2p \operatorname{Arctg} 2p + \frac{1}{2} l(1+4p^2) - 4p^2 A \right\}$ V. T. 467, N. 3.
- 13) $\int \sin(plx) \cdot \sqrt{l \frac{1}{x}} \cdot dx = -\frac{1}{4} \sqrt{\{-1+3p^2+\sqrt{1+p^2}\}} \cdot \sqrt{\frac{2\pi}{(1+p^2)^2}}$ V. T. 394, N. 1.
- 14) $\int \cos(plx) \cdot \sqrt{l \frac{1}{x}} \cdot dx = \frac{1}{4} \sqrt{\{1-3p^2+\sqrt{1+p^2}\}} \cdot \sqrt{\frac{2\pi}{(1+p^2)^2}}$ V. T. 394, N. 4.
- 15) $\int \sin(plx) \frac{dx}{\sqrt{l \frac{1}{x}}} = -\sqrt{\left\{ \frac{\pi}{2} \frac{\sqrt{1+p^2}-1}{1+p^2} \right\}}$ V. T. 395, N. 1.
- 16) $\int \cos(plx) \frac{dx}{\sqrt{l \frac{1}{x}}} = -\sqrt{\left\{ \frac{\pi}{2} \frac{\sqrt{1+p^2}+1}{1+p^2} \right\}}$ V. T. 395, N. 2.
- 17) $\int \sin \left(2p \sqrt{l \frac{1}{x}} \right) dx = p e^{-p^2} \sqrt{\pi}$ V. T. 362, N. 1.
- 18) $\int \cos \left(p \sqrt{l \frac{1}{x}} \right) dx = \frac{1}{4} - \frac{p}{4} \sum_{n=0}^{\infty} (-1)^n \frac{p^{2n+1}}{(n+1)^{n+1/2}}$ V. T. 362, N. 2.
- 19) $\int \operatorname{Tg} \left(p \sqrt{l \frac{1}{x}} \right) dx = 2p \sqrt{\pi} \cdot \sum_{n=1}^{\infty} (-1)^n n e^{-n^2 p^2}$ V. T. 362, N. 15.
- 20) $\int \operatorname{Cot} \left(p \sqrt{l \frac{1}{x}} \right) dx = -2p \sqrt{\pi} \cdot \sum_{n=1}^{\infty} n e^{-n^2 p^2}$ V. T. 362, N. 16.
- 21) $\int \operatorname{Cosec} \left(2p \sqrt{l \frac{1}{x}} \right) dx = -2p \sqrt{\pi} \cdot \sum_{n=1}^{\infty} (2n-1) e^{-(2n-1)^2 p^2}$ V. T. 362, N. 17.
- 22) $\int \sin \left(p \sqrt{l \frac{1}{x}} \right) \frac{dx}{lx} = \frac{1}{2} p \sqrt{\pi} \cdot \sum_{n=0}^{\infty} \frac{(-1)^{n-1}}{(2n+1) 1^{n/2}} \left(\frac{p}{2} \right)^{2n}$ V. T. 365, N. 21.

$$23) \int \cos \left(2p \sqrt{l \frac{1}{x}} \right) \frac{dx}{\sqrt{l \frac{1}{x}}} = e^{-p^2} \sqrt{\pi} \text{ V. T. 395, N. 3.}$$

$$24) \int l \sin \left(q l \frac{1}{x} \right) dx = -\frac{1}{4} l^2 - \sum_1^{\infty} \frac{1}{n} \frac{1}{1+4n^2 q^2} \text{ V. T. 467, N. 4.}$$

$$25) \int l \cos \left(q l \frac{1}{x} \right) dx = -\frac{1}{4} l^2 - \sum_1^{\infty} \frac{(-1)^n}{n} \frac{1}{1+4n^2 q^2} \text{ V. T. 467, N. 5.}$$

$$26) \int l \operatorname{Tg} \left(q l \frac{1}{x} \right) dx = -2 \sum_1^{\infty} \frac{1}{2n-1} \frac{1}{1+4(2n-1)^2 q^2} \text{ V. T. 467, N. 6.}$$

$$1) \int l \sin x . dx = -\frac{\pi}{4} l^2 - \frac{1}{2} \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 204, N. 2.}$$

$$2) \int l \sin x . \cos^a 2x . \sin 2x . dx = \frac{-1}{4(a+1)} \left\{ l^2 + \sum_0^a \frac{1}{n+1} \right\} \text{ V. T. 35, N. 11.}$$

$$3) \int l (2 \sin^2 x) . \operatorname{Tg} 2x . dx = -\frac{1}{12} \pi^2 \text{ V. T. 114, N. 14.}$$

$$4) \int l \sin 2x . \operatorname{Tg} \left(\frac{\pi}{4} + x \right) dx = -\frac{1}{12} \pi^2 \text{ V. T. 294, N. 4.}$$

$$5) \int l \sin 2x . \operatorname{Tg} \left(\frac{\pi}{4} - x \right) dx = -\frac{1}{24} \pi^2 \text{ V. T. 294, N. 5.}$$

$$6) \int l \sin 2x . \operatorname{Tg} \left(\frac{\pi}{4} + x \right) . \sin 2x . dx = \frac{6-\pi^2}{12} \text{ V. T. 108, N. 7.}$$

$$7) \int l \sin 2x . \operatorname{Tg}^2 \left(\frac{\pi}{4} + x \right) . \cos 2x . dx = \frac{3-\pi^2}{6} \text{ V. T. 108, N. 9.}$$

$$8) \int (l \sin 2x)^3 . \operatorname{Tg} \left(\frac{\pi}{4} + x \right) dx = -\frac{1}{30} \pi^4 \text{ V. T. 109, N. 11.}$$

$$9) \int (l \sin 2x)^3 . \operatorname{Tg} \left(\frac{\pi}{4} - x \right) dx = -\frac{7}{240} \pi^4 \text{ V. T. 109, N. 9.}$$

$$10) \int (l \sin 2x)^5 . \operatorname{Tg} \left(\frac{\pi}{4} + x \right) dx = -\frac{4}{63} \pi^6 \text{ V. T. 109, N. 21.}$$

$$11) \int (l \sin 2x)^5 . \operatorname{Tg} \left(\frac{\pi}{4} - x \right) dx = -\frac{31}{504} \pi^6 \text{ V. T. 109, N. 20.}$$

F. Log. en num. $(l \sin ax)^b$;
Circ. Dir. entière.

TABLE 285, suite.

Lim. 0 et $\frac{\pi}{4}$.

$$12) \int (l \sin 2x)^{2a} \cdot Tg \left(\frac{\pi}{4} - x \right) dx = \frac{1^{2a+1}}{2^{2a+1}} (2^{2a} - 1) \sum_1^{\infty} \frac{1}{\pi^{2a+1}} \quad \text{V. T. 110, N. 1.}$$

$$13) \int (l \sin 2x)^{2a-1} \cdot Tg \left(\frac{\pi}{4} + x \right) dx = -\frac{1}{8a} (2\pi)^{2a} B_{2a-1} \quad \text{V. T. 110, N. 5.}$$

$$14) \int (l \sin 2x)^{2a-1} \cdot Tg \left(\frac{\pi}{4} - x \right) dx = \frac{1-2^{2a-1}}{4a} \pi^{2a} B_{2a-1} \quad \text{V. T. 110, N. 2.}$$

$$15) \int (l \sin 2x)^{a-1} \cdot Tg \left(\frac{\pi}{4} + x \right) dx = (-1)^{a-1} 1^{a-1/2} \frac{1}{2} \sum_0^{\infty} \frac{1}{(1+n)^a} \quad \text{V. T. 110, N. 6.}$$

$$16) \int (l \sin 2x)^{a-1} \cdot Tg \left(\frac{\pi}{4} - x \right) dx = (-1)^{a-1} 1^{a-1/2} \frac{1}{2} \sum_0^{\infty} \frac{(-1)^n}{(1+n)^a} \quad \text{V. T. 110, N. 3.}$$

$$17) \int (l \sin 2x)^{a-1} \cdot Tg \left(\frac{\pi}{4} + x \right) \cdot \sin^q 2x \cdot dx = \frac{1}{2} (-1)^{a-1} 1^{a-1/2} \sum_0^{\infty} \frac{1}{(q+n+1)^a} \quad \text{V. T. 110, N. 7.}$$

$$18) \int (l \sin 2x)^{a-1} \cdot Tg \left(\frac{\pi}{4} - x \right) \cdot \sin^q 2x \cdot dx = \frac{1}{2} (-1)^{a-1} 1^{a-1/2} \sum_0^{\infty} \frac{(-1)^n}{(q+n+1)^a} \quad \text{V. T. 110, N. 4.}$$

F. Log. en num. $(l \cos ax)^b$, $(l \operatorname{Tang} ax)^b$;
Circ. Dir. entière.

TABLE 286.

Lim. 0 et $\frac{\pi}{4}$.

$$1) \int l \cos x \cdot dx = -\frac{1}{4} \pi l 2 + \frac{1}{2} \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad \text{V. T. 285, N. 1 et T. 286, N. 11.}$$

$$2) \int l \cos x \cdot \cos^{p-1} 2x \cdot Tg 2x \cdot dx = \frac{1}{8(1-p)} \left\{ Z' \left(\frac{p+1}{2} \right) - Z' \left(\frac{p}{2} \right) \right\} \quad \text{V. T. 34, N. 7.}$$

$$3) \int l (2 \cos^2 x) \cdot Tg 2x \cdot dx = \frac{1}{24} \pi^2 \quad \text{V. T. 114, N. 1.}$$

$$4) \int l \cos 2x \cdot Tg x \cdot dx = -\frac{1}{24} \pi^2 \quad \text{V. T. 286, N. 3.}$$

$$5) \int (l \cos 2x)^2 \cdot Tg x \cdot dx = -\frac{7}{240} \pi^2 \quad \text{V. T. 109, N. 9.}$$

$$6) \int (l \cos 2x)^4 \cdot Tg x \cdot dx = -\frac{31}{504} \pi^2 \quad \text{V. T. 109, N. 20.}$$

$$7) \int (l \cos 2x)^{2a-1} \cdot Tg x \cdot dx = \frac{1-2^{2a-1}}{4a} \pi^{2a} B_{2a-1} \quad \text{V. T. 110, N. 2.}$$

$$8) \int (l \cos 2x)^{2a} \cdot Tg x \cdot dx = \frac{2^{2a}-1}{2^{2a+1}} 1^{2a/2} \sum_1^{\infty} \frac{1}{\pi^{2a+1}} \quad \text{V. T. 110, N. 1.}$$

- 9) $\int (l \operatorname{Cos} 2x)^{a-1} \cdot \operatorname{Tg} x \cdot dx = \frac{1}{2} (-1)^{a-1} 1^{a-1/1} \sum_0^{\infty} \frac{(-1)^n}{(1+n)^a}$ V. T. 110, N. 3.
- 10) $\int (l \operatorname{Cos} 2x)^{a-1} \cdot \operatorname{Tg} x \cdot \operatorname{Cos}^2 2x \cdot dx = \frac{1}{2} (-1)^{a-1} 1^{a-1/1} \sum_0^{\infty} \frac{(-1)^n}{(q+n+1)^a}$ V. T. 110, N. 4.
- 11) $\int l \operatorname{Tg} x \cdot dx = - \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 206, N. 1.
- 12) $\int l \operatorname{Tg} x \cdot \operatorname{Tg} x \cdot dx = - \frac{1}{48} \pi^2$ V. T. 108, N. 1
- 13) $\int l \operatorname{Tg} x \cdot \operatorname{Sin} 2x \cdot dx = - \frac{1}{2} l2$ (IV, 433*). 14) $\int l \operatorname{Tg} x \cdot \operatorname{Tg} 2x \cdot dx = - \frac{1}{16} \pi^2$ V. T. 115, N. 15.
- 15) $\int l \operatorname{Tg} x \cdot \operatorname{Cos} 2x \cdot \operatorname{Sin}^{2p-1} 2x \cdot dx = - 2^{2p-1} \frac{\{\Gamma(p)\}^2}{p\Gamma(2p)}$ V. T. 112, N. 8.
- 16) $\int (l \operatorname{Tg} x)^2 \cdot dx = \frac{1}{16} \pi^2$ V. T. 109, N. 3.
- 17) $\int (l \operatorname{Tg} x)^2 \cdot \operatorname{Tg} x \cdot dx = - \frac{7}{1920} \pi^4$ V. T. 109, N. 9.
- 18) $\int (l \operatorname{Tg} x)^2 \cdot \operatorname{Tg} 2x \cdot dx = - \frac{1}{128} \pi^4$ V. T. 109, N. 13.
- 19) $\int (l \operatorname{Tg} x)^4 \cdot dx = \frac{5}{64} \pi^4$ V. T. 109, N. 17.
- 20) $\int (l \operatorname{Tg} x)^6 \cdot dx = \frac{61}{256} \pi^6$ V. T. 109, N. 25.
- 21) $\int (l \operatorname{Tg} x)^{q-1} \cdot dx = \operatorname{Cos} q\pi \cdot \Gamma(q) \sum_0^{\infty} \frac{(-1)^{n-1}}{(2n+1)^q}$ (VIII, 577).
- 22) $\int (l \operatorname{Tg} x)^{a-1} \cdot \operatorname{Tg} qx \cdot dx = (-1)^{a-1} 1^{a-1/1} \sum_0^{\infty} \frac{(-1)^n}{(q+1+2n)^a}$ (VIII, 577).

1) $\int l(1 + \operatorname{Tg} x) \cdot dx = \frac{\pi}{8} l2$ (VIII, 322).

2) $\int l(1 - \operatorname{Tg} x) \cdot dx = \frac{\pi}{8} l2 + \sum_0^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2}$ V. T. 114, N. 17.

- 3) $\int l(1 + \cot x) dx = \frac{\pi}{8} l2 + \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 115, N. 3.
- 4) $\int l(\cot x - 1) dx = \frac{\pi}{8} l2$ V. T. 115, N. 5.
- 5) $\int l(\operatorname{Tg} x + \cot x) dx = \frac{\pi}{2} l2$ V. T. 115, N. 7.
- 6) $\int l(\cot x - \operatorname{Tg} x) dx = \frac{\pi}{4} l2$ V. T. 115, N. 9.
- 7) $\int l(\sqrt{\operatorname{Tg} x} + \sqrt{\cot x}) dx = \frac{\pi}{8} l2 + \frac{1}{2} \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 115, N. 4.
- 8) $\int l(\sqrt{\cot x} - \sqrt{\operatorname{Tg} x}) dx = \frac{\pi}{8} l2 + \frac{1}{2} \sum_0^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2}$ V. T. 115, N. 6.
- 9) $\int l(1 - \operatorname{Tg}^2 x) dx = \frac{\pi}{4} l2 + \sum_0^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2}$ V. T. 114, N. 26.
- 10) $\int l(\cot^2 x - 1) dx = \frac{\pi}{4} l2 + \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 115, N. 10.
- 11) $\int l(\cot^2 x - \operatorname{Tg}^2 x) dx = \frac{3\pi}{4} l2$ V. T. 115, N. 12.
- 12) $\int l\left(\frac{\cos 2x}{\cos^2 x}\right) dx = \frac{\pi}{4} l2 + \sum_0^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2}$ V. T. 114, N. 26.
- 13) $\int l\left(\frac{\cos 2x}{\sin^2 x}\right) dx = \frac{\pi}{4} l2 + \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 115, N. 10.
- 14) $\int l\left(\frac{\cos x + \sin x}{\cos x - \sin x}\right) dx = \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 115, N. 17.
- 15) $\int l \operatorname{Tg} x \cdot (l \cos 2x)^2 \operatorname{Tg} 2x \cdot dx = -\frac{1}{192} \pi^4$ V. T. 311, N. 6.
- 16) $\int l \operatorname{Tg} x \cdot (l \cos 2x)^4 \cdot \operatorname{Tg} 2x \cdot dx = -\frac{1}{160} \pi^6$ V. T. 311, N. 8.
- 17) $\int l \operatorname{Tg} x \cdot (l \cos 2x)^6 \cdot \operatorname{Tg} 2x \cdot dx = -\frac{17}{896} \pi^8$ V. T. 311, N. 10.
- 18) $\int l \operatorname{Tg} x \cdot (l \cos 2x)^{2a} \cdot \operatorname{Tg} 2x \cdot dx = -\frac{2^{2a+2} - 1}{16(a+1)(2a+1)} \pi^{2a+2} B_{2a+1}$ V. T. 311, N. 11.

F. Log. en num.; } Autre forme. TABLE 287, suite.
Circ. Dir. ent. }

Lim. 0 et $\frac{\pi}{4}$.

$$19) \int l Tg x (l Cos 2x)^{2a-1} Tg 2x dx = \frac{2^{2a+1}-1}{2^{2a+1}} 1^{2a-1/2} \sum_1^{\infty} \frac{1}{n^{2a+1}} \text{ V. T. 311, N. 12.}$$

$$20) \int l Tg x (l Cos 2x)^{a-1} Tg 2x dx = (-1)^{a-1} \frac{1^{a-1/2}}{4} \sum_0^{\infty} \frac{1}{(1+2n)^{a+1}} \text{ V. T. 294, N. 20.}$$

F. Log. en num. $l Sin ax, l Cos ax$; TABLE 288.
Circ. Dir. rat. en dén. monôme.

Lim. 0 et $\frac{\pi}{4}$.

$$1) \int l Sin x \frac{Sin^{2a} x}{Cos^{2a+1} x} dx = -\frac{1}{2a+1} \left\{ \frac{1}{2} l 2 + (-1)^a \frac{\pi}{4} + \sum_0^{a-1} \frac{(-1)^n}{2a-2n-1} \right\} \text{ V. T. 34, N. 2.}$$

$$2) \int l Sin x \frac{Sin^{2a-1} x}{Cos^{2a+1} x} dx = \frac{1}{4a} \left\{ -l 2 + (-1)^a l 2 + \sum_0^{a-1} \frac{(-1)^n}{a-n} \right\} \text{ V. T. 34, N. 3.}$$

$$3) \int l Sin x \frac{Sin 2x}{Cos^{p+1} 2x} dx = \frac{1}{4p} \{ A + Z'(1-p) \} [-1 < p < 0] \text{ V. T. 34, N. 7.}$$

$$4) \int l Cos x \frac{dx}{Sin 2x} = -\frac{1}{96} \pi^2 \text{ V. T. 286, N. 12.}$$

$$5) \int l Cos 2x \frac{dx}{Tg x} = -\frac{1}{12} \pi^2 \text{ V. T. 286, N. 3.}$$

$$6) \int l Cos 2x \frac{Sin^2 x}{Tg x} dx = -\frac{1}{4} \text{ V. T. 288, N. 5, 8.}$$

$$7) \int l Cos 2x \frac{Cos^2 x}{Tg x} dx = \frac{1}{4} - \frac{1}{12} \pi^2 \text{ V. T. 288, N. 5, 8.}$$

$$8) \int l Cos 2x \frac{Cos 2x}{Tg x} dx = \frac{1}{12} (6 - \pi^2) \text{ V. T. 108, N. 7.}$$

$$9) \int l Cos 2x \frac{Sin 2x}{Tg^2 x} dx = \frac{1}{6} (8 - \pi^2) \text{ V. T. 108, N. 9.}$$

$$10) \int l Cos x \frac{Sin^{2a} x}{Cos^{2a+1} x} dx = \frac{1}{2a+1} \left\{ -\frac{1}{2} l 2 + (-1)^{a+1} \frac{\pi}{4} + \sum_0^a \frac{(-1)^{n-1}}{2a-2n+1} \right\} \text{ V. T. 34, N. 2.}$$

$$11) \int l Cos x \frac{Sin^{2a-1} x}{Cos^{2a+1} x} dx = \frac{1}{4a} \left\{ -l 2 + (-1)^a l 2 + \sum_0^{a-1} \frac{(-1)^n}{a-n} \right\} \text{ V. T. 34, N. 3.}$$

$$12) \int l Cos x \frac{Tg^p x}{Sin 2x} dx = \frac{1}{4p} \left\{ l \frac{1}{2} + 2 \sum_0^{\infty} \frac{(-1)^n}{p+2n+2} \right\} \text{ V. T. 106, N. 12.}$$

$$13) \int l Cos 2x \frac{Cos^{p-1} 2x}{Tg x} dx = -\frac{1}{2} \sum_0^{\infty} \frac{1}{(p+n)^2} \text{ V. T. 108, N. 8.}$$

F. Log. en num. $\int \text{Tg } ax$;
Circ. Dir. rat. en dén. mon.

TABLE 289.

Lim. 0 et $\frac{\pi}{4}$.

- 1) $\int \text{Tg } x \frac{dx}{\cos 2x} = -\frac{1}{8} \pi^2$ (VIII, 546).
- 2) $\int \text{Tg } x \frac{dx}{\sin 4x} = -\infty$ V. T. 112, N. 2.
- 3) $\int \text{Tg } x \frac{dx}{\text{Tg } 2x} = -\infty$ V. T. 112, N. 1.
- 4) $\int \text{Tg } x \frac{\text{Tg } 2x}{\cos^2 x} dx = -\frac{1}{12} \pi^2$ V. T. 315, N. 11.
- 5) $\int \text{Tg } x \frac{\text{Tg } x}{\cos 2x} dx = -\frac{1}{24} \pi^2$ V. T. 108, N. 6.
- 6) $\int \text{Tg } x \frac{\sin^{2a} x}{\cos^{2a+1} x} dx = -\frac{1}{(2a+1)^2}$ V. T. 288, N. 1, 10.
- 7) $\int \text{Tg } x \frac{\sin^{2a-1} x}{\cos^{2a+1} x} dx = -\frac{1}{4a^2}$ V. T. 288, N. 2, 11.
- 8) $\int \text{Tg } x \cdot \sin(p \cot x) \frac{dx}{\sin^2 x} = -\infty$ V. T. 35, N. 29.
- 9) $\int \text{Tg } x \cdot \cos(p \text{Tg } x) \frac{dx}{\cos^2 x} = -\frac{1}{p} S_i(p)$ V. T. 35, N. 28.
- 10) $\int \text{Tg } x \cdot \text{Tg} \left(\frac{\pi}{4} + x \right) \frac{dx}{\cos^2 x} = \frac{1}{8} (3 - \pi^2)$ V. T. 108, N. 9.
- 11) $\int \text{Tg } x \frac{\sin^2 x}{\cos 2x \cdot \cos x} dx = -\frac{1}{96} \pi^2$ V. T. 108, N. 6.
- 12) $\int \text{Tg } x \cdot \left(\frac{\cos x - \sin x}{\sin x} \right)^{p-1} \frac{dx}{\sin^2 x} = -\frac{\pi}{p} \text{Cosec } p\pi$ $[-1 < p < 0]$ V. T. 35, N. 27.

F. Log. en num. $(\int \sin ax)^b$, $(\int \cos ax)^b$, $(\int \text{Tg } ax)^b$;
Circ. Dir. rat. en dén. monôme.

TABLE 290.

Lim. 0 et $\frac{\pi}{4}$.

- 1) $\int (\int \sin 2x)^{q-1} \frac{\sin^2 2x}{\text{Tg} \left(\frac{\pi}{4} - x \right)} dx = -\frac{1}{2} \text{Cosec } q\pi \cdot \Gamma(q) \sum_{n=0}^{\infty} \frac{1}{(p+n+1)^q}$ V. T. 110, N. 7.
- 2) $\int (\int \sin 2x)^{2a-1} \cdot \text{Tg}^2 \left(\frac{\pi}{4} + x \right) \frac{dx}{\text{Tg } 2x} = \frac{-1}{2a} 2^{2a-1} \pi^{2a} B_{2a-1}$ V. T. 112, N. 10.
- 3) $\int (\int \cos 2x)^2 \frac{dx}{\text{Tg } x} = -\frac{1}{30} \pi^2$ V. T. 109, N. 11.
- 4) $\int (\int \cos 2x)^2 \frac{dx}{\text{Tg } x} = -\frac{4}{63} \pi^2$ V. T. 109, N. 21.

- 5) $\int (\int \cos 2x)^{2a-1} \frac{dx}{\tan x} = -\frac{1}{a} 2^{2a-1} \pi^{2a} B_{2a-1}$ V. T. 110, N. 5.
- 6) $\int (\int \cos 2x)^{a-1} \frac{dx}{\tan x} = \frac{1}{2} (-1)^{a-1} 1^{a-1/2} \sum_{n=0}^{\infty} \frac{1}{(n+1)^a}$ V. T. 110, N. 6.
- 7) $\int (\int \cos 2x)^{2a-1} \frac{\tan 2x}{\tan^2 x} dx = -\frac{1}{2a} 2^{2a-1} \pi^{2a} B_{2a-1}$ V. T. 112, N. 10.
- 8) $\int (\int \cos 2x)^{a-1} \frac{\cos^2 2x}{\tan x} dx = \frac{1}{2} (-1)^{a-1} 1^{a-1/2} \sum_{n=0}^{\infty} \frac{1}{(q+n+1)^a}$ V. T. 110, N. 7.
- 9) $\int (\int \tan x)^3 \frac{dx}{\cos 2x} = -\frac{1}{16} \pi^4$ V. T. 109, N. 13.
- 10) $\int (\int \tan x)^3 \frac{\tan x}{\cos 2x} dx = -\frac{1}{240} \pi^4$ V. T. 109, N. 11.
- 11) $\int (\int \tan x)^3 \frac{\sin x \cdot \cos x}{\cos 2x} dx = -\frac{1}{256} \pi^4$ V. T. 109, N. 13.
- 12) $\int (\int \tan x)^3 \frac{\sin^3 x}{\cos 2x \cdot \cos x} dx = -\frac{1}{3840} \pi^4$ V. T. 109, N. 11.
- 13) $\int (\int \tan x)^4 \frac{dx}{\cos 2x} = -\frac{1}{8} \pi^6$ V. T. 109, N. 22.
- 14) $\int (\int \tan x)^4 \frac{\tan x}{\cos 2x} dx = -\frac{1}{504} \pi^6$ V. T. 109, N. 21.
- 15) $\int (\int \tan x)^4 \frac{\sin x \cdot \cos x}{\cos 2x} dx = -\frac{1}{512} \pi^6$ V. T. 109, N. 22.
- 16) $\int (\int \tan x)^7 \frac{dx}{\cos 2x} = -\frac{17}{32} \pi^8$ V. T. 109, N. 30.
- 17) $\int (\int \tan x)^{2a-1} \frac{dx}{\cos 2x} = \frac{1-2^{2a}}{4a} \pi^{2a} B_{2a-1}$ V. T. 112, N. 9.
- 18) $\int (\int \tan x)^{2a} \frac{dx}{\cos 2x} = \frac{2^{2a+1}-1}{2^{2a+1}} 1^{2a/2} \sum_{n=1}^{\infty} \frac{1}{n^{2a+1}}$ V. T. 110, N. 12.
- 19) $\int (\int \tan x)^{2a-1} \frac{\tan x}{\cos 2x} dx = -\frac{1}{4a} \pi^{2a} B_{2a-1}$ V. T. 110, N. 5.
- 20) $\int (\int \tan x)^a \cdot \tan^p x \frac{dx}{\sin 2x} = \frac{(-1)^a}{2^{p+1}} 1^{a/2} \pi^{a/2}$ V. T. 107, N. 3.

F. Log. en num. $(l \sin ax)^b$, $(l \cos ax)^b$, $(l \operatorname{Tg} ax)^b$; TABLE 290, suite.
Circ. Dir. rat. en dén. monôme.

Lim. 0 et $\frac{\pi}{4}$.

$$21) \int (l \operatorname{Tg} x)^{2a-1} \cdot \operatorname{Tg} \left(\frac{\pi}{4} + x \right) \frac{dx}{\sin 2x} = -\frac{2^{2a-1}}{a} \pi^{2a} B_{2a-1} \quad \text{V. T. 112, N. 10.}$$

$$22) \int (l \operatorname{Tg} x)^{2a} \frac{dx}{\cos^2 \left(\frac{\pi}{4} + x \right)} = (2\pi)^{2a} B_{2a-1} \quad \text{V. T. 290, N. 21.}$$

F. Log. en num. $(l \operatorname{Tang} ax)^b$; TABLE 291.
Circ. Dir. rat. en dén. binôme.

Lim. 0 et $\frac{\pi}{4}$.

$$1) \int l \operatorname{Tg} x \frac{dx}{2 - \sin 2x} = -\frac{2}{27} \pi^2 \quad \text{V. T. 113, N. 3.}$$

$$2) \int l \operatorname{Tg} x \frac{\cos 2x}{1 + p \sin 2x} dx = \frac{1}{16p} \{4 (\operatorname{Arccos} p)^2 - \pi^2\} [p^2 \leq 1] \quad \text{V. T. 313, N. 1.}$$

$$3) \int l \operatorname{Tg} x \frac{\cos 2x}{1 - p \sin 2x} dx = -\frac{1}{4p} \operatorname{Arcsin} p \cdot \{\pi + \operatorname{Arcsin} p\} [p^2 < 1] \quad \text{V. T. 291, N. 2, 9.}$$

$$4) \int l \operatorname{Tg} x \frac{\operatorname{Tg} x}{1 - \sin x \cdot \cos x} dx = -\frac{5}{108} \pi^2 \quad \text{V. T. 113, N. 4.}$$

$$5) \int l \operatorname{Tg} x \frac{\cos \lambda - \operatorname{Tg} x}{1 - \cos \lambda \cdot \sin 2x} dx = \frac{1}{2} \pi \lambda - \frac{1}{6} \pi^2 - \frac{1}{4} \lambda^2 \quad \text{V. T. 113, N. 5.}$$

$$6) \int l \operatorname{Tg} x \frac{\sin 2x}{4 - 3 \sin^2 2x} dx = -\frac{1}{54} \pi^2 \quad \text{V. T. 112, N. 4.}$$

$$7) \int l \operatorname{Tg} x \frac{\cos 2x}{1 - \sin^2 \lambda \cdot \sin^2 2x} dx = -\frac{\pi}{4} \lambda \operatorname{Cosec} \lambda \quad \text{V. T. 113, N. 6.}$$

$$8) \int l \operatorname{Tg} x \frac{\sin 4x}{1 - p^2 \sin^2 2x} dx = \frac{-1}{2p^2} (\operatorname{Arcsin} p)^2 [p^2 < 1] \quad \text{V. T. 291, N. 2, 9.}$$

$$9) \int l \operatorname{Tg} x \frac{\cos 2x}{1 - p^2 \sin^2 2x} dx = -\frac{\pi}{4p} \operatorname{Arcsin} p [p^2 \leq 1] \quad \text{V. T. 315, N. 4.}$$

$$10) \int l \operatorname{Tg} x \frac{\cos 2x}{1 + p^2 \sin^2 2x} dx = -\frac{\pi}{4p} l \{p + \sqrt{1 + p^2}\} [p^2 < 1] \quad \text{V. T. 342, N. 1.}$$

$$11) \int l \operatorname{Tg} x \frac{\cos 2x}{\cos^2 2x + p^2 \sin^2 2x} dx = \frac{\pi}{4\sqrt{1-p^2}} \operatorname{Arccos} p [p^2 < 1] \quad \text{V. T. 315, N. 5.}$$

$$12) \int l \operatorname{Tg} x \frac{\cos 2x}{4 + (e^p - e^{-p})^2 \sin^2 2x} dx = -\frac{1}{8} p \frac{\pi}{e^p - e^{-p}} \quad (\text{IV, 410}).$$

$$13) \int (lTgx)^2 \frac{dx}{1 + \cos \lambda \cdot \sin 2x} = \frac{1}{8} \lambda (\pi^2 - \lambda^2) \operatorname{Cosec} \lambda \text{ V. T. 113, N. 7.}$$

$$14) \int (lTgx)^2 \frac{dx}{\sin^4 x + \cos^4 x} = \frac{3}{64} \pi^2 \sqrt{2} \text{ (VIII, 568).}$$

$$15) \int (lTgx)^2 \frac{dx}{1 - \sin^2 x \cdot \cos^2 x} = \frac{1}{27} \pi^2 \sqrt{3} \text{ V. T. 109, N. 6.}$$

$$16) \int (lTgx)^2 \frac{\sin 2x}{1 - \cos^2 \lambda \cdot \sin^2 2x} dx = \frac{1}{6} \lambda (\pi - \lambda) (\pi - 2\lambda) \operatorname{Cosec} \lambda \text{ V. T. 113, N. 7.}$$

$$17) \int (lTgx)^4 \frac{dx}{1 + \cos \lambda \cdot \sin 2x} = \frac{1}{6} \frac{\pi^2 - \lambda^2}{5} \frac{7\pi^2 - 3\lambda^2}{\sin \lambda} \lambda \text{ V. T. 113, N. 8.}$$

$$1) \int lTgx \frac{dx}{\cos x (\sin x + \cos x)} = -\frac{1}{12} \pi^2 \text{ V. T. 294, N. 6.}$$

$$2) \int lTgx \frac{dx}{\cos x (\cos x - \sin x)} = -\frac{1}{6} \pi^2 \text{ V. T. 294, N. 7.}$$

$$3) \int lTgx \frac{Tg^p x}{\cos x - \sin x} \frac{dx}{\sin 2x} = -\frac{1}{2} \sum_{n=0}^{\infty} \frac{1}{(p+n)^2} \text{ V. T. 108, N. 8.}$$

$$4) \int lTgx \frac{\sin^2 2x}{\cos^2 x - \sin^2 x} \frac{dx}{\sin 2x} = -2^{q-1} \left(\frac{\pi}{q}\right)^2 \text{ V. T. 108, N. 12.}$$

$$5) \int lTgx \frac{\sin^2 2x}{\sin^4 x + \cos^4 x} \frac{dx}{\cos 2x} = -\frac{\pi^2}{4(2 + \sqrt{2})} \text{ V. T. 112, N. 21.}$$

$$6) \int lTgx \frac{\cos 2x}{Tg^p x + \cot^p x} \frac{dx}{\sin^2 2x} = -\frac{\pi^2}{16p^2} \sin \frac{\pi}{2p} \sec^2 \frac{\pi}{2p} \text{ V. T. 108, N. 13.}$$

$$7) \int lTgx \frac{dx}{(Tg^p x - \cot^p x) \sin^2 2x} = \frac{\pi^2}{16p^2} \sec^2 \frac{\pi}{2p} \text{ V. T. 108, N. 14.}$$

$$8) \int lTgx \frac{Tg^q x - \cot^q x}{Tg^p x + \cot^p x} \frac{dx}{\sin 2x} = \frac{\pi^2}{8p^2} \sin \frac{q\pi}{2p} \sec^2 \frac{q\pi}{2p} \text{ V. T. 112, N. 3.}$$

$$9) \int lTgx \frac{Tg^q x + \cot^q x}{Tg^p x - \cot^p x} \frac{dx}{\sin 2x} = \frac{\pi^2}{8p^2} \sec^2 \frac{q\pi}{2p} \text{ V. T. 112, N. 4.}$$

$$10) \int lTgx \frac{dx}{(\sin x + \cos x)^2} = -12 \text{ V. T. 111, N. 1.}$$

- 11) $\int l Tg x \frac{\sin^{p-1} x}{(\cos x - \sin x)^{p+1}} dx = -\frac{\pi}{p} \operatorname{Cosec} p \pi [p < 1]$ V. T. 37, N. 20.
- 12) $\int l Tg x \frac{\sin^{p-1} 2x \cdot \cos 2x}{(1 + \sin 2x)^{p+1}} dx = -\frac{1}{p 2^{p+1}} \frac{\Gamma(p)}{\Gamma(p + \frac{1}{2})} \sqrt{\pi} [p \leq 1]$ V. T. 37, N. 1.
- 13) $\int l Tg x \frac{Tg^p x - \cot^p x}{(Tg^p x + \cot^p x)^2} \frac{dx}{\sin 2x} = \frac{\pi}{8p^2}$ V. T. 37, N. 12.
- 14) $\int l Tg x \frac{dx}{(Tg x + \cot x)^{2p+1} Tg 2x \cdot \sin 2x} = -\frac{\{\Gamma(p)\}^2}{32 p \Gamma(2p)}$ V. T. 37, N. 19.
- 15) $\int (l Tg x)^2 \frac{Tg^q x + \cot^q x}{Tg^p x + \cot^p x} \frac{dx}{\sin 2x} = \frac{\pi^2}{16 p^2} \left\{ 2 \operatorname{Sec}^2 \frac{q\pi}{2p} - \operatorname{Sec} \frac{q\pi}{2p} \right\}$ V. T. 109, N. 7.
- 16) $\int (l Tg x)^2 \frac{Tg^q x - \cot^q x}{Tg^p x - \cot^p x} \frac{dx}{\sin 2x} = \frac{\pi^2}{8 p^2} \sin \frac{q\pi}{2p} \cdot \operatorname{Sec}^2 \frac{q\pi}{2p}$ V. T. 109, N. 8.
- 17) $\int (l Tg x)^2 \frac{Tg^q x + \cot^q x}{(Tg^q x - \cot^q x)^2} \frac{dx}{\sin 2x} = \frac{\pi^2}{8 q^2}$ V. T. 292, N. 4.
- 18) $\int (l Tg x)^2 \frac{dx}{\cos x \cdot (\cos x + \sin x)} = -\frac{7}{120} \pi^2$ V. T. 109, N. 9.
- 19) $\int (l Tg x)^2 \frac{dx}{\cos x \cdot (\cos x - \sin x)} = -\frac{1}{15} \pi^2$ V. T. 109, N. 11.
- 20) $\int (l Tg x)^2 \frac{dx}{\cos x \cdot (\cos x + \sin x)} = -\frac{31}{252} \pi^2$ V. T. 109, N. 20.
- 21) $\int (l Tg x)^2 \frac{dx}{\cos x \cdot (\cos x - \sin x)} = -\frac{8}{63} \pi^2$ V. T. 109, N. 21.
- 22) $\int (l Tg x)^2 \frac{dx}{\cos x \cdot (\cos x + \sin x)} = -\frac{127}{240} \pi^2$ V. T. 109, N. 28.
- 23) $\int (l Tg x)^2 \frac{dx}{\cos x \cdot (\cos x - \sin x)} = -\frac{8}{15} \pi^2$ V. T. 109, N. 29.
- 24) $\int (l Tg x)^{2a} \frac{dx}{\cos x \cdot (\cos x + \sin x)} = \frac{2^{2a} - 1}{2^{2a}} 1^{2a/2} \sum_1^{\infty} \frac{1}{n^{2a+1}}$ V. T. 110, N. 1.
- 25) $\int (l Tg x)^{2a-1} \frac{dx}{\cos x \cdot (\cos x + \sin x)} = \frac{1 - 2^{2a-1}}{2a} \pi^{2a} B_{2a-1}$ V. T. 110, N. 2.
- 26) $\int (l Tg x)^{2a-1} \frac{dx}{\cos x \cdot (\cos x - \sin x)} = -\frac{1}{a} 2^{2a-1} \pi^{2a} B_{2a-1}$ V. T. 110, N. 5.

$$27) \int (\ell \operatorname{Tg} x)^{a-1} \frac{\operatorname{Tg}^a x}{\cos x + \sin x} \frac{dx}{\cos x} = (-1)^{a-1} 1^{a-1/1} \sum_{n=0}^{\infty} \frac{(-1)^{n-1}}{(q+n+1)^a} \quad \text{V. T. 110, N. 4.}$$

$$28) \int (\ell \operatorname{Tg} x)^{a-1} \frac{\operatorname{Tg}^a x}{\cos x - \sin x} \frac{dx}{\cos x} = (-1)^{a-1} 1^{a-1/1} \sum_{n=0}^{\infty} \frac{1}{(q+n+1)^a} \quad \text{V. T. 110, N. 7.}$$

$$29) \int (\ell \operatorname{Tg} x)^{p-1} \frac{\cos \lambda - \operatorname{Tg} x}{1 - \cos \lambda \cdot \sin 2x} \frac{\operatorname{Tg}^q x}{\sin 2x} dx = \frac{1}{2} \cos p\pi \cdot \Gamma(p) \sum_{n=0}^{\infty} \frac{\cos n\lambda}{(q+n-1)^p} \quad \text{V. T. 113, N. 11.}$$

$$1) \int \ell \operatorname{Tg} \left(\frac{\pi}{4} \pm x \right) \frac{dx}{\sin 2x} = \pm \frac{1}{8} \pi^2 \quad \text{V. T. 289, N. 1,}$$

$$2) \int \ell \operatorname{Tg} \left(\frac{\pi}{4} \pm x \right) \frac{dx}{\operatorname{Tg} 2x} = \pm \frac{1}{16} \pi^2 \quad \text{V. T. 310, N. 1.}$$

$$3) \int \ell \operatorname{Tg} \left(\frac{\pi}{4} \pm x \right) \frac{\operatorname{Tg}^{p-1} x + \operatorname{Cot}^{p-1} x}{\sin 2x} dx = \mp \frac{\pi}{2(p-1)} \operatorname{Cot} \frac{1}{2} p\pi [p < 1] \quad \text{V. T. 35, N. 10.}$$

$$4) \int \ell \operatorname{Tg} \left(\frac{\pi}{4} \pm x \right) \frac{\sin 2x}{1 + p \cos 2x} dx = \pm \frac{1}{16p} \{ \pi^2 - 4 (\operatorname{Arccos} p)^2 \} [p^2 \leq 1] \quad \text{V. T. 313, N. 8.}$$

$$5) \int \ell \operatorname{Tg} \left(\frac{\pi}{4} \pm x \right) \frac{\sin 2x}{1 - p \cos 2x} dx = \pm \frac{1}{4p} \operatorname{Arcsin} p \cdot (\pi + \operatorname{Arcsin} p) [p^2 \leq 1] \quad \text{V. T. 293, N. 4, 6.}$$

$$6) \int \ell \operatorname{Tg} \left(\frac{\pi}{4} \pm x \right) \frac{\sin 2x}{1 - p^2 \cos^2 2x} dx = \pm \frac{\pi}{4p} \operatorname{Arcsin} p [p^2 \leq 1] \quad \text{V. T. 315, N. 12.}$$

$$7) \int \ell \operatorname{Tg} \left(\frac{\pi}{4} \pm x \right) \frac{\sin 4x}{1 - p^2 \cos^2 2x} dx = \pm \frac{1}{2p^2} (\operatorname{Arcsin} p)^2 [p^2 < 1] \quad \text{V. T. 293, N. 4, 6.}$$

$$8) \int \ell \operatorname{Tg} \left(\frac{\pi}{4} \pm x \right) \frac{\sin 2x}{1 + p^2 \cos^2 2x} dx = \pm \frac{\pi}{4p} \ell \{ p + \sqrt{1+p^2} \} [p^2 < 1] \quad \text{V. T. 342, N. 2.}$$

$$9) \int \ell \operatorname{Tg} \left(\frac{\pi}{4} \pm x \right) \frac{\sin 2x}{1 - p^2 \cos^2 2x} dx = \pm \frac{\pi}{8p} \{ \ell \{ p + \sqrt{1+p^2} \} + \operatorname{Arcsin} p \} [p^2 < 1]$$

V. T. 293, N. 6, 8.

$$10) \int \ell \operatorname{Tg} \left(\frac{\pi}{4} \pm x \right) \frac{\sin 4x \cdot \cos 2x}{1 - p^2 \cos^2 2x} dx = \pm \frac{\pi}{4p^2} \{ \operatorname{Arcsin} p - \ell \{ p + \sqrt{1+p^2} \} \} [p^2 < 1]$$

V. T. 293, N. 6, 8.

- 1) $\int l \cos x \frac{dx}{(\cos x + p \sin x)^2} = \frac{1}{1+p^2} \left\{ -\frac{\pi}{4} + \frac{1}{p} l(1+p) - \frac{1-p}{1+p} \frac{1}{2} l2 \right\} [p < 1] \text{ (IV, 41b).}$
- 2) $\int l \cos x \frac{\cos 2x}{(1+p \sin 2x)^2} dx = -\frac{1}{4p} l(1+p) - \frac{1}{4(1+p)} l2 + \frac{1}{4\sqrt{1-p^2}} \text{Arctg} \left(\sqrt{\frac{1-p}{1+p}} \right)$
[$p^2 < 1$] V. T. 36, N. 2.
- 3) $\int l \cos x \frac{\cos 2x}{(1 - \cos \lambda \cdot \sin 2x)^2} dx = \frac{\pi - \lambda}{4 \sin \lambda} + \frac{1}{2 \cos \lambda} l \sin \frac{1}{2} \lambda - \frac{1}{4} \frac{1 + \cos \lambda}{1 - \cos \lambda} \sec \lambda \cdot l2$
V. T. 36, N. 1.
- 4) $\int l \left\{ 2 \sin^2 \left(\frac{\pi}{4} + x \right) \right\} \frac{dx}{\text{Tg } 2x} = \frac{1}{24} \pi^2 \text{ V. T. 114, N. 1.}$
- 5) $\int l \left\{ 2 \sin^2 \left(\frac{\pi}{4} - x \right) \right\} \frac{dx}{\text{Tg } 2x} = -\frac{1}{12} \pi^2 \text{ V. T. 114, N. 14.}$
- 6) $\int l(1 + \text{Tg } x) \frac{dx}{\sin 2x} = \frac{1}{24} \pi^2 \text{ V. T. 114, N. 1.}$
- 7) $\int l(1 - \text{Tg } x) \frac{dx}{\sin 2x} = -\frac{1}{12} \pi^2 \text{ V. T. 114, N. 14.}$
- 8) $\int l \left(\frac{1}{2} \sin 2x \right) \frac{\sin^{2a} x}{\cos^{2a+1} x} dx = \frac{1}{2a+1} \left\{ (-1)^{a+1} \frac{\pi}{2} - l2 + \frac{1}{2a+1} + 2 \sum_0^{a-1} \frac{(-1)^{n-1}}{2a-2n-1} \right\}$
V. T. 288, N. 1, 10.
- 9) $\int l(\sin x \cdot \cos x) \frac{\sin^{2a-1} x}{\cos^{2a+1} x} dx = \frac{1}{2a} \left\{ (-1)^a l2 - l2 + \frac{1}{2a} + (-1)^a \sum_1^{a-1} \frac{(-1)^n}{n} \right\}$
V. T. 288, N. 2, 11.
- 10) $\int l \left(\frac{\cos 2x}{\cos^2 x} \right) \frac{dx}{\sin 2x} = -\frac{1}{24} \pi^2 \text{ V. T. 114, N. 31.}$
- 11) $\int l \left(\frac{1 - \cos 2\lambda \cdot \sin 2x}{\cos^2 x} \right) \frac{dx}{\sin 2x} = \frac{1}{2} \pi \lambda - \frac{1}{6} \pi^2 - \frac{1}{4} \lambda^2 \text{ V. T. 114, N. 34.}$
- 12) $\int l(1 + \text{Tg } x) \frac{dx}{(q^2 \cos^2 x + \sin^2 x)(\cos^2 x + q^2 \sin^2 x)} = \frac{\pi}{4q(1+q^2)} \left\{ l(1+q^2) - 2 \text{Arctg } q \cdot lq \right\}$
(VIII, 545).
- 13) $\int l \cos x \cdot (l \text{Tg } x)^2 \frac{dx}{\sin 2x} = -\frac{7}{11520} \pi^4 \text{ V. T. 286, N. 17.}$
- 14) $\int l \cos 2x \cdot (l \text{Tg } x)^2 \frac{dx}{\sin 2x} = -\frac{1}{384} \pi^4 \text{ V. T. 286, N. 18.}$

- 15) $\int l Tg \left(\frac{\pi}{4} \pm x \right) \cdot (l \sin 2x)^2 \frac{dx}{Tg 2x} = \pm \frac{1}{96} \pi^4$ V. T. 310, N. 5.
- 16) $\int l Tg \left(\frac{\pi}{4} \pm x \right) \cdot (l \sin 2x)^4 \frac{dx}{Tg 2x} = \pm \frac{1}{80} \pi^6$ V. T. 310, N. 6.
- 17) $\int l Tg \left(\frac{\pi}{4} \pm x \right) \cdot (l \sin 2x)^6 \frac{dx}{Tg 2x} = \pm \frac{17}{448} \pi^8$ V. T. 310, N. 7.
- 18) $\int l Tg \left(\frac{\pi}{4} \pm x \right) \cdot (l \sin 2x)^{2a} \frac{dx}{Tg 2x} = \pm \frac{2^{2a+2} - 1}{8(a+1)(2a+1)} \pi^{2a+2} B_{2a+1}$ V. T. 310, N. 9.
- 19) $\int l Tg \left(\frac{\pi}{4} \pm x \right) \cdot (l \sin 2x)^{2a-1} \frac{dx}{Tg 2x} = \pm \frac{1 - 2^{2a+1}}{a \cdot 2^{2a+2}} l^{2a/1} \sum_1^{\infty} \frac{1}{n^{2a+1}}$ V. T. 310, N. 8.
- 20) $\int l Tg \left(\frac{\pi}{4} \pm x \right) \cdot (l \sin 2x)^{a-1} \frac{dx}{Tg 2x} = \pm \frac{1}{4a} (-1)^a l^{a/1} \sum_0^{\infty} \frac{1}{(2n+1)^{a+1}}$ V. T. 310, N. 10.
- 21) $\int l Tg \left(\frac{\pi}{4} \pm x \right) \cdot (l Tg x)^2 \frac{dx}{\sin 2x} = \pm \frac{1}{48} \pi^4$ V. T. 290, N. 9.
- 22) $\int l Tg \left(\frac{\pi}{4} \pm x \right) \cdot (l Tg x)^4 \frac{dx}{\sin 2x} = \pm \frac{1}{40} \pi^6$ V. T. 290, N. 13.
- 23) $\int l Tg \left(\frac{\pi}{4} \pm x \right) \cdot (l Tg x)^6 \frac{dx}{\sin 2x} = \pm \frac{17}{224} \pi^8$ V. T. 290, N. 16.
- 24) $\int l Tg \left(\frac{\pi}{4} \pm x \right) \cdot (l Tg x)^{2a} \frac{dx}{\sin 2x} = \pm \frac{2^{2a+2} - 1}{4(a+1)(2a+1)} \pi^{2a+2} B_{2a+1}$ V. T. 290, N. 17.
- 25) $\int l Tg \left(\frac{\pi}{4} \pm x \right) \cdot (l Tg x)^{2a-1} \frac{dx}{\sin 2x} = \pm \frac{1 - 2^{2a+1}}{2^{2a+2} a} l^{2a/1} \sum_1^{\infty} \frac{1}{n^{2a+1}}$ V. T. 290, N. 18.

- 1) $\int ll \cot x \frac{Tg^2 x}{\sin 2x} dx = -\frac{1}{2q} (A + lq)$ V. T. 147, N. 1.
- 2) $\int ll \cot x \frac{dx}{2 - \sin 2x} = \frac{\pi}{\sqrt{3}} \left\{ \frac{5}{6} l 2\pi - l \Gamma \left(\frac{1}{6} \right) \right\}$ V. T. 148, N. 5.
- 3) $\int ll \cot x \frac{dx}{1 + \cos \lambda \cdot \sin 2x} = \frac{\pi}{2} \operatorname{Cosec} \lambda \cdot l \frac{(2\pi)^{\frac{\lambda}{2}} \Gamma \left(\frac{\pi + \lambda}{2\pi} \right)}{\Gamma \left(\frac{\pi - \lambda}{2\pi} \right)}$ V. T. 147, N. 9.

$$4) \int l l \cot x \frac{dx}{(\sin x + \cos x)^2} = \frac{1}{2} Z' \left(\frac{1}{2} \right) + \frac{1}{2} l 2 \pi \text{ V. T. 147, N. 7.}$$

$$5) \int l l \cot x \frac{Tg^a x + \cot^a x}{Tg^b x + \cot^b x} \frac{dx}{\sin 2x} = \frac{\pi}{4b} \sec \frac{a\pi}{2b} l 2 \pi + \frac{\pi}{2b} \sum_1^b (-1)^{n-1} \cos \left(\frac{n-\frac{1}{2}}{b} a \pi \right).$$

$$l \frac{\Gamma \left(\frac{b+n-\frac{1}{2}}{2b} \right)}{\Gamma \left(\frac{n-\frac{1}{2}}{2b} \right)} \left[\begin{matrix} a+b \\ \text{impair} \end{matrix} \right], = \frac{\pi}{4b} \sec \frac{a\pi}{2b} l \pi + \frac{\pi}{2b} \sum_1^{b-1} (-1)^{n-1} \cos \left(\frac{n-\frac{1}{2}}{b} a \pi \right).$$

$$l \frac{\Gamma \left(\frac{b-n+\frac{1}{2}}{b} \right)}{\Gamma \left(\frac{n-\frac{1}{2}}{b} \right)} \left[\begin{matrix} a+b \\ \text{pair} \end{matrix} \right] \text{ V. T. 148, N. 6.}$$

$$6) \int l(p + l Tg x) \frac{Tg^q x}{\sin 2x} dx = \frac{1}{2q} \{lp - e^{-pq} Ei(pq)\} \text{ V. T. 302, N. 6.}$$

$$7) \int l(p - l Tg x) \frac{Tg^q x}{\sin 2x} dx = \frac{1}{2q} \{lp + e^{pq} Ei(-pq)\} \text{ V. T. 302, N. 7.}$$

$$8) \int l \{q^2 + (l Tg x)^2\} dx = \pi l \frac{2 \Gamma \left(\frac{2q+3\pi}{4\pi} \right)}{\Gamma \left(\frac{2q+\pi}{4\pi} \right)} + \frac{\pi}{2} l \frac{\pi}{2} \text{ V. T. 147, N. 10.}$$

$$9) \int l l \cot x \cdot (Tg^p x + \cot^p x) dx = \frac{\pi}{2} (l\pi - A) \sec \frac{p\pi}{2} - \sum_0^\infty (-1)^n \left\{ \frac{l \{(2n+1)\pi - p\pi\}}{2n+1-p} + \frac{l \{(2n+1)\pi + p\pi\}}{2n+1+p} \right\} \text{ V. T. 147, N. 5.}$$

$$10) \int l l \cot x \frac{Tg^p x - \cot^p x}{\cos 2x} dx = \frac{\pi}{2} (A - l\pi) Tg \frac{1}{2} p \pi + \sum_0^\infty \left\{ \frac{l \{(2n+1)\pi - p\pi\}}{2n+1-p} - \frac{l \{(2n+1)\pi + p\pi\}}{2n+1+p} \right\} \text{ V. T. 147, N. 6.}$$

$$11) \int l l \cot x \cdot (l \cot x)^{p-1} \frac{Tg^p x}{\sin 2x} dx = \frac{\Gamma(p)}{2q^p} \{Z'(p) - lq\} \text{ V. T. 147, N. 2.}$$

$$1) \int l Tg x \frac{\sqrt{\cos 2x}}{\cos^2 x} dx = -\frac{\pi}{4} \left(\frac{1}{2} + l 2 \right) \text{ V. T. 117, N. 1.}$$

$$2) \int l Tg x \frac{\sin x \cdot \sqrt{\cos 2x}}{\cos^2 x} dx = \frac{1}{3} \left(l 2 - \frac{4}{3} \right) \text{ V. T. 117, N. 2.}$$

- 3) $\int l Tg x \frac{(\cos 2x)^{a-\frac{1}{2}}}{\cos^{a+1} x} dx = -\frac{1^{a/2} \pi}{2^{a+1} 1^{a/2}} \{A + Z'(a+1) + 2l2\}$ V. T. 117, N. 3.
- 4) $\int l Tg x \frac{Tg x}{\sqrt{\cos 2x}} dx = -\frac{\pi}{8} l2$ V. T. 118, N. 3.
- 5) $\int l Tg x \frac{Tg^3 x}{\sqrt{\cos 2x}} dx = \frac{1}{4} (l2 - 1)$ V. T. 118, N. 4.
- 6) $\int l Tg x \frac{dx}{\cos x \cdot \sqrt{\cos 2x}} = -\frac{\pi}{2} l2$ V. T. 118, N. 3.
- 7) $\int l Tg x \frac{\sin x}{\cos^2 x \cdot \sqrt{\cos 2x}} dx = l2 - 1$ V. T. 118, N. 4.
- 8) $\int l Tg x \frac{\sin^{2a-1} x}{\cos^{2a} x \cdot \sqrt{\cos 2x}} dx = \frac{2^{a-1/2}}{1^{a/2}} \left\{ l2 + \sum_1^{2a-1} \frac{(-1)^n}{n} \right\}$ V. T. 118, N. 6.
- 9) $\int l Tg x \frac{\sin^{2a} x}{\cos^{2a+1} x \cdot \sqrt{\cos 2x}} dx = \frac{3^{a-1/2}}{2^{a/2}} \frac{\pi}{2} \left\{ -l2 + \sum_1^{2a} \frac{(-1)^{n-1}}{n} \right\}$ V. T. 118, N. 5.
- 10) $\int l Tg x \frac{dx}{\cos x \cdot \sqrt{\cos^2 x - \sin^2 x}} = -\frac{1}{27} \pi^2 - \frac{\pi}{3\sqrt{3}} l3$ V. T. 118, N. 7.
- 11) $\int l Tg x \frac{\sin x}{\cos x \cdot \sqrt{\cos^2 x - \sin^2 x}} dx = \frac{1}{27} \pi^2 - \frac{\pi}{3\sqrt{3}} l3$ V. T. 118, N. 8.
- 12) $\int l Tg x \frac{(\cot x - 1)^{p-1}}{\sin^2 x} dx = -\frac{2\pi}{2p+1} \sec p \pi \left[p < \frac{1}{2} \right]$ V. T. 39, N. 16.
- 13) $\int l Tg x \frac{1}{(\cot x - 1)^{p+1}} \frac{dx}{\sin^2 x} = \frac{2}{2p-1} \pi \sec p \pi \left[p < \frac{1}{2} \right]$ V. T. 38, N. 12.
- 14) $\int l Tg x \frac{dx}{\sqrt{\cos x \cdot (\cos x - \sin x)^2}} = -4l2$ V. T. 39, N. 7.
- 15) $\int (l Tg x)^2 \frac{dx}{\cos x \cdot \sqrt{\cos 2x}} = \frac{\pi}{2} \left\{ (l2)^2 + \frac{1}{12} \pi^2 \right\}$ V. T. 118, N. 13.
- 16) $\int (l Tg x)^{2a-1} \frac{1}{\cos x - \sin x} \frac{dx}{\sqrt{\sin 2x}} = \frac{1-2^{2a}}{4a\sqrt{2}} (2\pi)^{2a} B_{2a-1}$ V. T. 112, N. 9.
- 17) $\int (l Tg x)^{2a} \frac{\sin x + \cos x}{(\sin x - \cos x)^2} \frac{dx}{\sqrt{\sin 2x}} = \frac{2^{2a}-1}{\sqrt{2}} (2\pi)^{2a} B_{2a-1}$ V. T. 296, N. 16.

- 1) $\int (\ell \sin 2x)^{2a-1} \cdot \text{Tg} \left(\frac{\pi}{4} + x \right) \frac{dx}{\sqrt{\sin 2x}} = \frac{1-2^{2a}}{8a} (2\pi)^{2a} B_{2a-1}$ V. T. 112, N. 9.
- 2) $\int \ell \cos x \frac{1 + \cos^2 2x}{\sin^2 2x} \frac{dx}{\sqrt{\cos 2x}} = \frac{1}{\sqrt{2}} \left\{ E' \left(\sin \frac{\pi}{4} \right) - F' \left(\sin \frac{\pi}{4} \right) \right\}$ V. T. 38, N. 1.
- 3) $\int \ell \cos x \frac{\sin^4 x + \cos^4 x}{\sin^2 2x \cdot \sqrt{\cos 2x}} dx = \frac{1}{2\sqrt{2}} \left\{ E' \left(\sin \frac{\pi}{4} \right) - F' \left(\sin \frac{\pi}{4} \right) \right\}$ V. T. 120, N. 5.
- 4) $\int (\ell \cos 2x)^{2a-1} \frac{dx}{\text{Tg} x \cdot \sqrt{\cos 2x}} = \frac{1-2^{2a}}{8a} (2\pi)^{2a} B_{2a-1}$ V. T. 112, N. 9.
- 5) $\int (\ell \cot x)^{a-\frac{1}{2}} \frac{\text{Tg}^p x}{\sin 2x} dx = \frac{1^{a/2}}{(2p)^{a+1}} \sqrt{p\pi}$ V. T. 107, N. 2.
- 6) $\int \ell \text{Tg} \left(\frac{\pi}{4} \pm x \right) \frac{\sin x}{\cos^2 x} \frac{dx}{\sqrt{\cos 2x}} = \pm \pi$ V. T. 38, N. 15.
- 7) $\int \ell \text{Tg} \left(\frac{\pi}{4} \pm x \right) \frac{1-2 \text{Tg}^2 x}{\cos x \cdot \sqrt{\cos 2x}} dx = \mp 2$ V. T. 38, N. 16.
- 8) $\int \ell \text{Tg} \left(\frac{\pi}{4} \pm x \right) \frac{\sin x}{\cos^2 x + p^2 \cos 2x} \frac{dx}{\sqrt{\cos 2x}} = \pm \frac{\pi}{p} \ell \{ p + \sqrt{1+p^2} \}$ V. T. 348, N. 2.
- 9) $\int dx \sqrt{\ell \cot x} = \frac{1}{2} \sqrt{\pi} \sum_{n=0}^{\infty} \frac{(-1)^n}{\sqrt{(2n+1)^2}}$ V. T. 115, N. 33.
- 10) $\int \ell \left(\frac{\cos 2x}{\cos^2 x} \right) \frac{dx}{\cos x \cdot \sqrt{\cos 2x}} = -\pi \ell 2$ V. T. 120, N. 10.
- 11) $\int \ell \left(\frac{\cos x + p \sqrt{\cos 2x}}{\cos x + p \sqrt{\cos 2x}} \right) \frac{dx}{\cos 2x} = \pi \text{Arcsin } p [p \leq 1]$ V. T. 115, N. 29.

- 1) $\int \sin^2 \left(\frac{\pi}{4} - x \right) \cdot \text{Tg} \left(\frac{\pi}{4} - x \right) \frac{dx}{\ell \sin 2x} = \frac{1}{4} \ell \frac{2}{\pi}$ V. T. 127, N. 3.
- 2) $\int \sin^4 \left(\frac{\pi}{4} - x \right) \cdot \text{Tg} \left(\frac{\pi}{4} - x \right) \frac{dx}{\ell \sin 2x} = \frac{1}{8} \ell \frac{8}{\pi^2}$ V. T. 298, N. 1, 4.
- 3) $\int \sin^2 \left(\frac{\pi}{4} - x \right) \cdot \text{Tg} \left(\frac{\pi}{4} - x \right) \cdot \sin 2x \frac{dx}{\ell \sin 2x} = \frac{1}{4} \ell \frac{\pi}{4}$ V. T. 298, N. 1, 4.
- 4) $\int \sin^2 \left(\frac{\pi}{4} - x \right) \cdot \cos 2x \frac{dx}{\ell \sin 2x} = -\frac{1}{4} \ell 2$ V. T. 123, N. 4.

- 5) $\int (1 - \sin^{q-1} 2x) Tg \left(\frac{\pi}{4} - x \right) \frac{dx}{l \sin 2x} = \frac{1}{2} l \frac{\Gamma \left(\frac{q}{2} \right)}{\Gamma \left(\frac{1}{2} \right) \Gamma \left(\frac{q+1}{2} \right)} \text{ V. T. 127, N. 4.}$
- 6) $\int (1 - \sin^2 2x) (1 - \sin^q 2x) Tg \left(\frac{\pi}{4} + x \right) \frac{dx}{l \sin 2x} = \frac{1}{2} l \frac{\Gamma(p+1) \Gamma(q+1)}{\Gamma(p+q+1)} \text{ V. T. 127, N. 8.}$
- 7) $\int \sin^2 x \cdot Tg x \frac{dx}{l \cos 2x} = \frac{1}{4} l \frac{2}{\pi} \text{ V. T. 127, N. 3.}$
- 8) $\int \sin^2 x \cdot \sin 2x \frac{dx}{l \cos 2x} = -\frac{1}{4} l 2 \text{ V. T. 128, N. 3.}$
- 9) $\int \sin^2 x \cdot \cos 2x \cdot Tg x \frac{dx}{l \cos 2x} = \frac{1}{4} l \frac{\pi}{4} \text{ V. T. 298, N. 7, 8.}$
- 10) $\int \sin^4 x \cdot Tg x \frac{dx}{l \cos 2x} = \frac{1}{8} l \frac{8}{\pi^2} \text{ V. T. 298, N. 7, 8.}$
- 11) $\int \cos^q 2x \cdot \sin^{2n} x \cdot Tg 2x \frac{dx}{(l \cos 2x)^2} = \frac{1}{2^{q+1}} \sum_0^q (-1)^n \binom{q}{n} (q+n+1) l (q+n+1) \text{ V. T. 124, N. 6.}$
- 12) $\int Tg \left(\frac{\pi}{4} - x \right) \frac{dx}{\cos^2 x \cdot l Tg x} = l \frac{2}{\pi} \text{ V. T. 127, N. 3.}$
- 13) $\int (1 - Tg x)^2 \frac{dx}{l Tg x} = l \frac{\pi}{4} \text{ V. T. 128, N. 2.}$
- 14) $\int Tg \left(\frac{\pi}{4} - x \right) \frac{dx}{l Tg x} = -\frac{1}{2} l 2 \text{ (VIII, 545).}$
- 15) $\int Tg \left(\frac{\pi}{4} - x \right) \frac{Tg^2 x}{l Tg x} dx = l \frac{2 \sqrt{2}}{\pi} \text{ V. T. 130, N. 7.}$
- 16) $\int Tg \left(\frac{\pi}{4} - x \right) \frac{dx}{\cos^2 x \cdot l Tg x} = -l \frac{\pi}{2} \text{ V. T. 298, N. 14, 15.}$
- 17) $\int \sin(2p l Tg x) \frac{dx}{l Tg x} = \text{Arctg}(e^{2p\pi}) \text{ V. T. 405, N. 13.}$

- 1) $\int (\sin^{q-1} 2x - \text{Cosec}^q 2x) Tg \left(\frac{\pi}{4} - x \right) \frac{dx}{l \sin 2x} = \frac{1}{2} l Tg \frac{1}{2} q \pi \text{ V. T. 130, N. 6.}$
- 2) $\int (\sin^q 2x - \text{Cosec}^q 2x)^2 Tg \left(\frac{\pi}{4} + x \right) \frac{dx}{l \sin 2x} = \frac{1}{2} l \frac{\sin 2q \pi}{2 q \pi} \text{ V. T. 130, N. 11.}$

$$3) \int (\sin^2 2x - \operatorname{Cosec}^2 2x)^2 \operatorname{Tg} \left(\frac{\pi}{4} - x \right) \frac{dx}{l \sin 2x} = \frac{1}{2} l (q\pi \operatorname{Cot} q\pi) \text{ V. T. 130, N. 7.}$$

$$4) \int \sin^2 2x \cdot \sin^{2a} \left(\frac{\pi}{4} - x \right) \frac{dx}{\operatorname{Tg} 2x (l \sin 2x)^2} = \frac{1}{2^{a+1}} \sum_0^a (-1)^n \binom{a}{n} (q+n+1) l (q+n+1) \\ \text{V. T. 124, N. 6.}$$

$$5) \int \frac{1 - \operatorname{Cos}^{q-1} 2x}{\operatorname{Cot} x} \frac{dx}{l \operatorname{Cos} 2x} = \frac{1}{2} l \frac{\Gamma \left(\frac{q}{2} \right)}{\Gamma \left(\frac{q+1}{2} \right) \sqrt{\pi}} \text{ V. T. 127, N. 4.}$$

$$6) \int (\operatorname{Cos}^{q-1} 2x - \operatorname{Sec}^2 2x) \operatorname{Tg} x \frac{dx}{l \operatorname{Cos} 2x} = \frac{1}{2} l \operatorname{Tg} \frac{1}{2} q\pi \text{ V. T. 130, N. 6.}$$

$$7) \int \frac{(1 - \operatorname{Cos}^p 2x)(1 - \operatorname{Cos}^q 2x)}{\operatorname{Tg} x} \frac{dx}{l \operatorname{Cos} 2x} = \frac{1}{2} l \frac{\Gamma(p+1)\Gamma(q+1)}{\Gamma(p+q+1)} \text{ V. T. 127, N. 8.}$$

$$8) \int (\operatorname{Cos}^2 2x - \operatorname{Sec}^2 2x)^2 \operatorname{Tg} x \frac{dx}{l \operatorname{Cos} 2x} = \frac{1}{2} l (q\pi \operatorname{Cot} q\pi) \text{ V. T. 130, N. 7.}$$

$$9) \int \frac{(\operatorname{Cos}^2 2x - \operatorname{Sec}^2 2x)^2}{\operatorname{Tg} x} \frac{dx}{l \operatorname{Cos} 2x} = \frac{1}{2} l \frac{\sin 2q\pi}{2q\pi} \text{ V. T. 130, N. 11.}$$

$$10) \int \frac{\operatorname{Tg} \left(\frac{\pi}{4} - x \right)}{\operatorname{Cos}^2 x} \frac{dx}{l \operatorname{Tg} x} = l \frac{2}{\pi} \text{ V. T. 127, N. 3.}$$

$$11) \int (\operatorname{Tg}^p x - \operatorname{Cot}^p x) \frac{dx}{l \operatorname{Tg} x} = l \operatorname{Tg} \left(\frac{1+p}{4} \pi \right) \text{ V. T. 130, N. 8.}$$

$$12) \int \frac{\operatorname{Cos} x - \sin x}{\operatorname{Cos}^2 x} \frac{dx}{l \operatorname{Tg} x} = -l2 \text{ V. T. 123, N. 4.}$$

$$13) \int \frac{\operatorname{Tg}^q x - \operatorname{Tg}^p x}{\sin 2x} \frac{dx}{l \operatorname{Tg} x} = \frac{1}{2} l \frac{q}{p} \text{ V. T. 123, N. 3.}$$

$$14) \int \frac{(\operatorname{Tg}^q x - \operatorname{Cot}^q x)^2}{\operatorname{Cos} 2x} \frac{dx}{l \operatorname{Tg} x} = l \operatorname{Cos} q\pi \text{ V. T. 130, N. 12.}$$

$$15) \int \frac{(\operatorname{Tg}^q x - \operatorname{Cot}^q x)^2}{\operatorname{Cos} 2x} \operatorname{Tg} x \frac{dx}{l \operatorname{Tg} x} = l \frac{\sin q\pi}{q\pi} \text{ V. T. 130, N. 13.}$$

$$16) \int \frac{(1 - \operatorname{Tg}^q x)(1 - \operatorname{Tg}^{q+1} x)}{\operatorname{Cos} 2x} \frac{dx}{l \operatorname{Tg} x} = -ql2 \text{ V. T. 128, N. 12.}$$

$$17) \int \left(\frac{\operatorname{Cos} x - \sin x}{\operatorname{Cos}^2 x} \right)^2 \frac{dx}{(l \operatorname{Tg} x)^2} = l \frac{27}{16} \text{ V. T. 124, N. 1.}$$

$$18) \int \left(\frac{\cos x - \sin x}{\cos^2 x} \right)^2 \frac{\sin 2x}{(l \operatorname{Tg} x)^2} dx = 4l \frac{32}{27} \text{ V. T. 124, N. 3.}$$

$$19) \int (\operatorname{Tg}^q x + \operatorname{Cot}^q x) \frac{dx}{(l \operatorname{Tg} x)^p} = \cos p\pi \cdot \Gamma(1-p) \sum_{n=0}^{\infty} (-1)^n \left\{ \frac{1}{(2n+1-q)^{1-p}} + \frac{1}{(2n+1+q)^{1-p}} \right\} \\ \text{V. T. 131, N. 1.}$$

$$20) \int \frac{\operatorname{Tg}^q x - \operatorname{Cot}^q x}{\cos 2x} \frac{dx}{(l \operatorname{Tg} x)^p} = -\cos p\pi \cdot \Gamma(1-p) \sum_{n=0}^{\infty} \left\{ \frac{1}{(2n+1-q)^{1-p}} - \frac{1}{(2n+1+q)^{1-p}} \right\} \\ \text{V. T. 131, N. 2.}$$

$$21) \int \frac{\cos(2pl \operatorname{Tg} x)}{\operatorname{Tg} 2x} \frac{dx}{l \operatorname{Tg} x} = \frac{1}{2} l \frac{1 - e^{-p\pi}}{1 + e^{-p\pi}} \text{ V. T. 405, N. 15.}$$

$$1) \int \frac{\sin^2 x \cdot \operatorname{Tg} x}{1 + \cos^2 2x} \frac{dx}{l \cos 2x} = -\frac{1}{4} l 2 \text{ V. T. 130, N. 16.}$$

$$2) \int \frac{\sin^2 x \cdot \operatorname{Tg} x}{1 + \sec^2 2x} \frac{dx}{l \cos 2x} = \frac{1}{2} l \frac{2\sqrt{2}}{\pi} \text{ V. T. 130, N. 17.}$$

$$3) \int \frac{\cos 2x}{1 - 2 \sin^2 x \cdot \cos^2 x} \frac{dx}{l \operatorname{Tg} x} = l \operatorname{Cot} \frac{3\pi}{8} \text{ V. T. 128, N. 3.}$$

$$4) \int \frac{\cos x - \sin x}{\cos x + \sin x} \frac{dx}{l \operatorname{Tg} x} = -\frac{1}{2} l 2 \text{ (VIII, 545).}$$

$$5) \int \frac{(1 - \operatorname{Tg}^q x)(1 - \operatorname{Tg}^p x) - (1 - \operatorname{Tg} x)^2}{\cos x - \sin x} \frac{dx}{\sin x \cdot l \operatorname{Tg} x} = l \frac{\Gamma(p)\Gamma(q)}{\Gamma(p+q)} \text{ V. T. 130, N. 18.}$$

$$6) \int \frac{1 - \operatorname{Tg}^q x}{\sin x + \cos x} \frac{\operatorname{Tg}^p x}{\cos x \cdot l \operatorname{Tg} x} dx = l \frac{\Gamma\left(\frac{1}{2}p+1\right)\Gamma\left(\frac{p+q+1}{2}\right)}{\Gamma\left(\frac{p+1}{2}\right)\Gamma\left(\frac{p+q}{2}+1\right)} \text{ V. T. 127, N. 6.}$$

$$7) \int \frac{\operatorname{Tg}^p x - \operatorname{Tg}^q x}{\sin x + \cos x} \frac{dx}{\sin x \cdot l \operatorname{Tg} x} = l \frac{\Gamma\left(\frac{q}{2}\right)\Gamma\left(\frac{p+1}{2}\right)}{\Gamma\left(\frac{q+1}{2}\right)\Gamma\left(\frac{p}{2}\right)} \text{ V. T. 127, N. 5.}$$

$$8) \int \frac{\operatorname{Tg}^q x - \operatorname{Cot}^q x}{\operatorname{Tg}^p x + \operatorname{Cot}^p x} \frac{dx}{\sin 2x \cdot l \operatorname{Tg} x} = \frac{1}{2} l \operatorname{Tg} \left(\frac{p+q}{4p} \pi \right) \text{ V. T. 128, N. 5.}$$

$$9) \int \frac{(\operatorname{Tg}^q x - \operatorname{Cot}^q x)^2}{\operatorname{Tg}^p x - \operatorname{Cot}^p x} \frac{dx}{\sin 2x \cdot l \operatorname{Tg} x} = \frac{1}{2} l \cos \frac{q\pi}{p} \text{ V. T. 128, N. 8.}$$

$$10) \int \frac{Tg^{p-1} x - Cot^p x}{\sin x + \cos x} \frac{dx}{\cos x \cdot l Tg x} = l Tg \frac{1}{2} p \pi \text{ V. T. 130, N. 6.}$$

$$11) \int \frac{(Tg^p x - Cot^p x)^2}{\sin x + \cos x} \frac{dx}{\cos x \cdot l Tg x} = l(p\pi Cot p\pi) \text{ V. T. 130, N. 7.}$$

$$12) \int \frac{(Tg^p x - Cot^p x)^2}{\sin x - \cos x} \frac{dx}{\cos x \cdot l Tg x} = l(2p\pi Cosc 2p\pi) \text{ V. T. 130, N. 11.}$$

$$13) \int \frac{1 - Tg^q x}{\cos x - \sin x} \frac{1 - Tg^p x}{\sin x} \frac{Tg^r x}{l Tg x} dx = l \frac{\Gamma(p+r)\Gamma(q+r)}{\Gamma(p+q+r)\Gamma(r)} \text{ V. T. 127, N. 9.}$$

$$14) \int \frac{1 - Tg^{q-1} x}{\sin x - \cos x} \frac{1 - Tg^{q-1} x}{\sqrt{\sin 2x}} \frac{dx}{l Tg x} = \frac{2q-2}{\sqrt{2}} l 2 \text{ V. T. 132, N. 15.}$$

$$15) \int \frac{1}{1 + \cos \lambda \cdot \sin 2x} \frac{dx}{(l Cot x)^{1-q}} = Cosc \lambda \cdot \Gamma(q) \sum_1^{\infty} (-1)^{n-1} \frac{\sin n\lambda}{n^q} \text{ V. T. 130, N. 1.}$$

$$16) \int \frac{\sin x + \cos x}{1 + \cos \lambda \cdot \sin 2x} \frac{Sec x}{(l Cot x)^{1-q}} dx = Sec \frac{1}{2} \lambda \cdot \Gamma(q) \sum_1^{\infty} (-1)^{n-1} \frac{\cos \{(2n-1)\frac{1}{2}\lambda\}}{n^q} \text{ V. T. 130, N. 5.}$$

$$1) \int \frac{dx}{\pi^2 + (l Tg x)^2} = \frac{4-\pi}{4\pi} \text{ V. T. 129, N. 6.}$$

$$2) \int \frac{dx}{\pi^2 + (l Tg^2 x)^2} = \frac{1}{4\pi} l 2 \text{ V. T. 129, N. 7.}$$

$$3) \int \frac{dx}{q^2 + (l Tg x)^2} = \frac{1}{4q} \left\{ Z' \left(\frac{2q+3\pi}{4\pi} \right) - Z' \left(\frac{2q+\pi}{4\pi} \right) \right\} \text{ V. T. 129, N. 9.}$$

$$4) \int Tg \left(\frac{\pi}{4} + x \right) \frac{l \sin 2x}{4\pi^2 + (l \sin 2x)^2} dx = \frac{1}{8} (1-2A) \text{ V. T. 129, N. 1.}$$

$$5) \int Tg \left(\frac{\pi}{4} + x \right) \frac{l \sin 2x}{q^2 + (l \sin 2x)^2} dx = \frac{1}{4} \left\{ l \frac{2\pi}{q} + \frac{\pi}{q} + Z' \left(\frac{q}{2\pi} \right) \right\} \text{ V. T. 129, N. 2.}$$

$$6) \int Tg \left(\frac{\pi}{4} + x \right) \frac{l \sin 2x}{q^2 - (l \sin 2x)^2} dx = \frac{2\pi^2}{q^2} \sum_0^{\infty} (-1)^{n-1} \left(\frac{2\pi}{q} \right)^{2n} \frac{1}{n+1} B_{2n+1} \text{ V. T. 129, N. 3.}$$

$$7) \int Tg \left(\frac{\pi}{4} + x \right) \frac{l \sin 2x}{\{q^2 + (l \sin 2x)^2\}^2} dx = -\frac{\pi^2}{2q^4} \sum_0^{\infty} B_{2n+1} \left(\frac{2\pi}{q} \right)^{2n} \text{ V. T. 129, N. 4.}$$

$$8) \int Tg \left(\frac{\pi}{4} + x \right) \frac{l \sin 2x}{\{q^2 - (l \sin 2x)^2\}^2} dx = \frac{\pi^2}{2q^4} \sum_0^{\infty} (-1)^{n+1} \left(\frac{2\pi}{q} \right)^{2n} B_{2n+1} \text{ V. T. 129, N. 5.}$$

- 9) $\int Tg 2x \cdot l Sin x \frac{4\pi^2 - (l Cos 2x)^2}{\{4\pi^2 + (l Cos 2x)^2\}^2} dx = \frac{1}{16} (1 - 2A) \text{ V. T. 302, N. 1.}$
- 10) $\int Tg 2x \cdot l Sin x \frac{q^2 - (l Cos 2x)^2}{\{q^2 + (l Cos 2x)^2\}^2} dx = \frac{1}{8} \left\{ l \frac{2\pi}{q} + \frac{\pi}{q} + Z' \left(\frac{q}{2\pi} \right) \right\} \text{ V. T. 302, N. 2.}$
- 11) $\int Tg 2x \cdot l Sin x \frac{q^2 + (l Cos 2x)^2}{\{q^2 - (l Cos 2x)^2\}^2} dx = \frac{\pi^2}{q^2} \sum_{n=0}^{\infty} (-1)^{n+1} \left(\frac{2\pi}{q} \right)^{2n} \frac{B_{2n+1}}{n+1} \text{ V. T. 302, N. 3.}$
- 12) $\int Tg 2x \cdot l Sin x \frac{q^2 - 3(l Cos 2x)^2}{\{q^2 + (l Cos 2x)^2\}^2} dx = -\frac{\pi^2}{4q^4} \sum_{n=0}^{\infty} \left(\frac{2\pi}{q} \right)^{2n} B_{2n+1} \text{ V. T. 302, N. 4.}$
- 13) $\int Tg 2x \cdot l Sin x \frac{q^2 + 3(l Cos 2x)^2}{\{q^2 - (l Cos 2x)^2\}^2} dx = \frac{\pi^2}{4q^4} \sum_{n=0}^{\infty} (-1)^{n-1} \left(\frac{2\pi}{q} \right)^{2n} B_{2n+1} \text{ V. T. 302, N. 5.}$

- 1) $\int \frac{l Cos 2x}{4\pi^2 + (l Cos 2x)^2} \frac{dx}{Tgx} = \frac{1}{8} (1 - 2A) \text{ V. T. 129, N. 1.}$
- 2) $\int \frac{l Cos 2x}{q^2 + (l Cos 2x)^2} \frac{dx}{Tgx} = \frac{1}{8} \left\{ l \frac{2\pi}{q} + \frac{\pi}{q} + Z' \left(\frac{q}{2\pi} \right) \right\} \text{ V. T. 129, N. 2.}$
- 3) $\int \frac{l Cos 2x}{q^2 - (l Cos 2x)^2} \frac{dx}{Tgx} = \frac{2\pi^2}{q^2} \sum_{n=0}^{\infty} (-1)^{n+1} \left(\frac{2\pi}{q} \right)^{2n} \frac{B_{2n+1}}{n+1} \text{ V. T. 129, N. 3.}$
- 4) $\int \frac{l Cos 2x}{\{q^2 + (l Cos 2x)^2\}^2} \frac{dx}{Tgx} = -\frac{\pi^2}{4q^4} \sum_{n=0}^{\infty} \left(\frac{2\pi}{q} \right)^{2n} B_{2n+1} \text{ V. T. 129, N. 4.}$
- 5) $\int \frac{l Cos 2x}{\{q^2 - (l Cos 2x)^2\}^2} \frac{dx}{Tgx} = \frac{\pi^2}{2q^4} \sum_{n=0}^{\infty} (-1)^{n+1} \left(\frac{2\pi}{q} \right)^{2n} B_{2n+1} \text{ V. T. 129, N. 5.}$
- 6) $\int \frac{Tg^q x}{Sin 2x} \frac{dx}{p + l Tgx} = \frac{1}{2} e^{-pq} Ei(pq) \text{ V. T. 125, N. 1.}$
- 7) $\int \frac{Tg^q x}{Sin 2x} \frac{dx}{p - l Tgx} = -\frac{1}{2} e^{pq} Ei(-pq) \text{ V. T. 125, N. 2.}$
- 8) $\int \frac{Tgx}{Cos 2x} \frac{l Tgx}{q^2 + (l Tgx)^2} dx = \frac{\pi}{4q} + \frac{1}{2} l \frac{\pi}{q} + \frac{1}{2} Z' \left(\frac{q}{\pi} \right) \text{ V. T. 129, N. 14.}$
- 9) $\int \frac{Tgx}{Cos 2x} \frac{l Tgx}{q^2 - (l Tgx)^2} dx = \frac{\pi^2}{4q^2} \sum_{n=0}^{\infty} (-1)^{n-1} \left(\frac{\pi}{q} \right)^{2n} \frac{B_{2n+1}}{n+1} \text{ V. T. 129, N. 15.}$

$$10) \int \frac{lTgx}{\pi^2 + (lTgx)^2} \frac{dx}{\cos 2x} = \frac{1}{2} \left\{ \frac{1}{2} - l2 \right\} \text{ V. T. 129, N. 10.}$$

$$11) \int \frac{lTgx}{\pi^2 + (lTgx)^2} \frac{Tgx}{\cos 2x} dx = \frac{1}{4} - \frac{1}{2} A \text{ V. T. 129, N. 13.}$$

$$12) \int \frac{lTgx}{\pi^2 + (lTgx)^2} \frac{dx}{\cos 2x} = \frac{2-\pi}{16} \text{ V. T. 129, N. 11.}$$

$$13) \int \frac{lTgx}{q^2 + (lTgx)^2} \frac{Tgx}{\cos 2x} dx = \frac{1}{4} - \frac{1}{2} l \frac{q}{2\pi} + \frac{\pi}{2q} + \frac{1}{2} Z' \left(\frac{q}{2\pi} \right) \text{ V. T. 129, N. 2.}$$

$$14) \int \frac{lTgx}{\pi^2 + (lTgx)^2} \frac{dx}{\cos 2x} = -\frac{\pi\sqrt{2}}{64} + \frac{1}{16} + \frac{1}{32\sqrt{2}} l \frac{\sqrt{2}-1}{\sqrt{2}+1} \text{ V. T. 129, N. 12.}$$

$$15) \int \frac{Tg^p x - Cot^p x}{\pi^2 + (lTgx)^2} \frac{dx}{\cos 2x} = \frac{1}{2\pi} \left\{ p\pi \cos p\pi - \sin p\pi \cdot l \{ 2(1 + \cos p\pi) \} \right\} [p < 1]$$

V. T. 131, N. 4.

$$16) \int \frac{Tg^p x + Cot^p x}{\pi^2 + (lTgx)^2} \frac{lTgx}{\cos 2x} dx = \frac{1}{2} \left\{ 1 - p\pi \sin p\pi - \cos p\pi \cdot l \{ 2(1 + \cos p\pi) \} \right\} [p < 1]$$

V. T. 131, N. 3.

$$17) \int \frac{Tg^p x - Cot^p x}{\pi^2 + (lTgx)^2} \frac{dx}{\cos 2x} = -\frac{1}{4} \sin \frac{1}{2} p\pi + \frac{\pi}{4} \cos \frac{1}{2} p\pi \cdot l \frac{1 + \sin \frac{1}{2} p\pi}{1 - \sin \frac{1}{2} p\pi} [p < 1]$$

V. T. 131, N. 6.

$$18) \int \frac{Tg^p x + Cot^p x}{\pi^2 + (lTgx)^2} \frac{lTgx}{\cos 2x} dx = \frac{1}{4} - \frac{\pi}{8} \cos \frac{1}{2} p\pi + \frac{1}{8} \sin \frac{1}{2} p\pi \cdot l \frac{1 - \sin \frac{1}{2} p\pi}{1 + \sin \frac{1}{2} p\pi} [p < 1]$$

V. T. 131, N. 5.

$$19) \int \frac{lTgx}{\{q^2 + (lTgx)^2\}^2} \frac{Tgx}{\cos 2x} dx = -\frac{\pi^2}{4q^4} \sum_0^{\infty} \left(\frac{\pi}{q} \right)^{2n} B_{2n+1} \text{ V. T. 129, N. 16.}$$

$$20) \int \frac{lTgx}{\{q^2 - (lTgx)^2\}^2} \frac{Tgx}{\cos 2x} dx = \frac{\pi^2}{4q^4} \sum_0^{\infty} (-1)^{n-1} \left(\frac{\pi}{q} \right)^{2n} B_{2n+1} \text{ V. T. 129, N. 17.}$$

$$21) \int lTg \left(\frac{\pi}{4} \pm x \right) \frac{\pi^2 - (lTgx)^2}{\{\pi^2 + (lTgx)^2\}^2} \frac{dx}{\sin 2x} = \pm \frac{1}{2} \left\{ l2 - \frac{1}{2} \right\} \text{ V. T. 302, N. 10.}$$

$$22) \int lTg \left(\frac{\pi}{4} \pm x \right) \frac{\pi^2 - (lTgx)^2}{\{\pi^2 + (lTgx)^2\}^2} \frac{dx}{\sin 2x} = \pm \frac{\pi-2}{16} \text{ V. T. 302, N. 12.}$$

$$23) \int lTg \left(\frac{\pi}{4} \pm x \right) \frac{\pi^2 - (lTgx)^2}{\{\pi^2 + (lTgx)^2\}^2} \frac{dx}{\sin 2x} = \pm \left\{ \frac{\pi\sqrt{2}}{64} - \frac{1}{16} + \frac{1}{32\sqrt{2}} l \frac{\sqrt{2}+1}{\sqrt{2}-1} \right\}$$

V. T. 302, N. 14.

$$24) \int \frac{l Tg x}{4\pi^2 + (l Tg x)^2} \frac{dx}{\cos x (\cos x - \sin x)} = \frac{1}{4} (1 - 2A) \text{ V. T. 129, N. 1.}$$

$$25) \int \frac{l Tg x}{q^2 - (l Tg x)^2} \frac{dx}{\cos x (\cos x - \sin x)} = \frac{\pi^2}{q^2} \sum_{n=0}^{\infty} (-1)^{n+1} \left(\frac{2\pi}{q}\right)^{2n} \frac{B_{2n+1}}{n+1} \text{ V. T. 129, N. 3.}$$

$$1) \int \frac{Tg\left(\frac{\pi}{4} - x\right)}{\pi^2 + (l \sin 2x)^2} \frac{dx}{\sqrt{\sin 2x}} = \frac{1}{4\pi} l 2 \text{ V. T. 132, N. 1.}$$

$$2) \int \frac{Tg\left(\frac{\pi}{4} - x\right)}{\pi^2 + 4(l \sin 2x)^2} \frac{dx}{\sqrt{\sin 2x}} = \frac{1}{8\pi\sqrt{2}} \left\{ \pi - l \frac{\sqrt{2+1}}{\sqrt{2-1}} \right\} \text{ V. T. 132, N. 3.}$$

$$3) \int \frac{Tg\left(\frac{\pi}{4} - x\right)}{q^2 + (l \sin 2x)^2} \frac{dx}{\sqrt{\sin 2x}} = \frac{1}{8q} \left\{ Z'\left(\frac{q+3\pi}{4\pi}\right) - Z'\left(\frac{q+\pi}{4\pi}\right) \right\} \text{ V. T. 132, N. 4.}$$

$$4) \int \frac{Tg\left(\frac{\pi}{4} + x\right)}{4\pi^2 + (l \sin 2x)^2} \frac{\sin^2 2x - \operatorname{Cosec}^2 2x}{\sqrt{\sin 2x}} dx = \frac{1}{8\pi} [2p\pi \cos 2p\pi + \sin 2p\pi \cdot l \{2(1 + \cos 2p\pi)\}]$$

V. T. 132, N. 11.

$$5) \int \frac{Tg\left(\frac{\pi}{4} + x\right)}{4\pi^2 + (l \sin 2x)^2} \frac{\sin^2 2x + \operatorname{Cosec}^2 2x}{\sqrt{\sin 2x}} l \sin 2x dx = \frac{1}{4} [1 - 2p\pi \sin 2p\pi - \cos 2p\pi \cdot l \{2(1 + \cos 2p\pi)\}] \text{ V. T. 132, N. 12.}$$

$$6) \int \frac{Tg\left(\frac{\pi}{4} + x\right)}{\pi^2 + (l \sin 2x)^2} \frac{\sin^2 2x - \operatorname{Cosec}^2 2x}{\sqrt{\sin 2x}} dx = \frac{1}{4} \left\{ \frac{1}{\pi} \cos p\pi \cdot l \frac{1 + \sin p\pi}{1 - \sin p\pi} - \sin p\pi \right\}$$

V. T. 132, N. 9.

$$7) \int \frac{Tg\left(\frac{\pi}{4} + x\right)}{q^2 + (l \sin 2x)^2} \frac{\sin^2 2x - \operatorname{Cosec}^2 2x}{\sqrt{\sin 2x}} dx = \frac{\pi}{q} \sum_{n=1}^{\infty} \frac{\sin \{(2p+1)n\pi\}}{q+n\pi} [p < 1] \text{ V. T. 132, N. 13.}$$

$$8) \int \frac{Tg\left(\frac{\pi}{4} + x\right)}{\pi^2 + (l \sin 2x)^2} \frac{l \sin 2x}{\sqrt{\sin 2x}} dx = \frac{2-\pi}{8} \text{ V. T. 132, N. 5.}$$

$$9) \int \frac{Tg\left(\frac{\pi}{4} + x\right)}{\pi^2 + 4(l \sin 2x)^2} \frac{l \sin 2x}{\sqrt{\sin 2x}} dx = \frac{-1}{16\sqrt{2}} \left\{ \pi - 2\sqrt{2} + l \frac{\sqrt{2+1}}{\sqrt{2-1}} \right\} \text{ V. T. 132, N. 6.}$$

$$10) \int \frac{Tg\left(\frac{\pi}{4} + x\right)}{\pi^2 + (l \sin 2x)^2} \frac{\sin^2 2x + \operatorname{Cosec}^2 2x}{\sqrt{\sin 2x}} l \sin 2x dx = \frac{1}{2} - \frac{\pi}{4} \cos p\pi - \frac{1}{4} \sin p\pi \cdot l \frac{1 + \sin p\pi}{1 - \sin p\pi}$$

V. T. 132, N. 10.

$$11) \int \frac{Tg\left(\frac{\pi}{4} + x\right)}{q^2 + (l \sin 2x)^2} \frac{\sin^2 2x + \operatorname{Cosec}^2 2x}{\sqrt{\sin 2x}} l \sin 2x dx = -\frac{\pi}{2q} - \pi \sum_1^{\infty} \frac{\cos\{(2p+1)n\pi\}}{q + n\pi} [p^2 < 1]$$

V. T. 132, N. 14.

$$12) \int \frac{Tgx}{\pi^2 + (l \cos 2x)^2} \frac{dx}{\sqrt{\cos 2x}} = \frac{1}{4\pi} l^2 \text{ V. T. 132, N. 1.}$$

$$13) \int \frac{Tgx}{\pi^2 + 4(l \cos 2x)^2} \frac{dx}{\sqrt{\cos 2x}} = \frac{1}{8\pi\sqrt{2}} \left\{ \pi + l \frac{\sqrt{2}-1}{\sqrt{2}+1} \right\} \text{ V. T. 132, N. 3.}$$

$$14) \int \frac{Tgx}{q^2 + (l \cos 2x)^2} \frac{dx}{\sqrt{\cos 2x}} = \frac{1}{8q} \left\{ Z'\left(\frac{q+3\pi}{4\pi}\right) - Z'\left(\frac{q+\pi}{4\pi}\right) \right\} \text{ V. T. 132, N. 4.}$$

$$15) \int \frac{\cos^2 2x - \sec^2 2x}{\pi^2 + (l \cos 2x)^2} \frac{dx}{Tgx \cdot \sqrt{\cos 2x}} = \frac{1}{4} \left\{ \frac{1}{\pi} \cos p\pi \cdot l \frac{1 + \sin p\pi}{1 - \sin p\pi} - \sin p\pi \right\} \text{ V. T. 132, N. 9.}$$

$$16) \int \frac{\cos^2 2x - \sec^2 2x}{4\pi^2 + (l \cos 2x)^2} \frac{dx}{Tgx \cdot \sqrt{\cos 2x}} = \frac{-1}{8\pi} \left\{ 2p\pi \cos 2p\pi + \sin 2p\pi \cdot l \{2(1 + \cos 2p\pi)\} \right\}$$

V. T. 132, N. 11.

$$17) \int \frac{\cos^2 2x - \sec^2 2x}{q^2 + (l \cos 2x)^2} \frac{dx}{Tgx \cdot \sqrt{\cos 2x}} = \frac{\pi}{q} \sum_1^{\infty} \frac{\sin\{(2p+1)n\pi\}}{q + n\pi} [p < 1] \text{ V. T. 132, N. 13.}$$

$$18) \int \frac{l \cos 2x}{\pi^2 + (l \cos 2x)^2} \frac{dx}{Tgx \cdot \sqrt{\cos 2x}} = \frac{2-\pi}{8} \text{ V. T. 132, N. 5.}$$

$$19) \int \frac{l \cos 2x}{\pi^2 + 4(l \cos 2x)^2} \frac{dx}{Tgx \cdot \sqrt{\cos 2x}} = \frac{-1}{16\sqrt{2}} \left\{ \pi - 2\sqrt{2} + l \frac{\sqrt{2}+1}{\sqrt{2}-1} \right\} \text{ V. T. 132, N. 6.}$$

$$20) \int \frac{\cos^2 2x + \sec^2 2x}{\pi^2 + (l \cos 2x)^2} \frac{l \cos 2x}{Tgx \cdot \sqrt{\cos 2x}} dx = \frac{1}{2} - \frac{\pi}{4} \cos p\pi - \frac{1}{4} \sin p\pi \cdot l \frac{1 + \sin p\pi}{1 - \sin p\pi}$$

V. T. 132, N. 10.

$$21) \int \frac{\cos^2 2x + \sec^2 2x}{4\pi^2 + (l \cos 2x)^2} \frac{l \cos 2x}{Tgx \cdot \sqrt{\cos 2x}} dx = \frac{1}{4} \left\{ 1 - 2p\pi \sin 2p\pi - \cos 2p\pi \cdot l \{2(1 + \cos 2p\pi)\} \right\}$$

V. T. 132, N. 12.

$$22) \int \frac{\cos^2 2x + \sec^2 2x}{q^2 + (l \cos 2x)^2} \frac{l \cos 2x}{Tgx \cdot \sqrt{\cos 2x}} dx = -\frac{\pi}{2q} - \pi \sum_1^{\infty} \frac{\cos\{(2p+1)n\pi\}}{q + n\pi} [p < 1]$$

V. T. 132, N. 14.

$$23) \int \frac{1}{q^2 + (l Tgx)^2} \frac{1}{\sin x + \cos x} \frac{dx}{\sqrt{\sin 2x}} = \frac{1}{4q\sqrt{2}} \left\{ Z'\left(\frac{q+3\pi}{4\pi}\right) - Z'\left(\frac{q+\pi}{4\pi}\right) \right\} \text{ V. T. 132, N. 4.}$$

$$24) \int \frac{Tg^p x - Cot^p x}{q^2 + (l Tg x)^2} \frac{1}{\sin x - \cos x} \frac{dx}{\sqrt{\sin 2x}} = \frac{\pi \sqrt{2}}{q} \sum_{n=1}^{\infty} \frac{\sin \{(2p+1)n\pi\}}{q+n\pi} [p < 1] \text{ V. T. 132, N. 13.}$$

$$25) \int \frac{Tg^p x + Cot^p x}{q^2 + (l Tg x)^2} \frac{l Tg x}{\sin x - \cos x} \frac{dx}{\sqrt{\sin 2x}} = \frac{\pi}{q \sqrt{2}} + \pi \sqrt{2} \sum_{n=1}^{\infty} \frac{\cos \{(2p+1)n\pi\}}{q+n\pi} [p < 1]$$

V. T. 132, N. 14.

$$1) \int l Tg x \cdot \sin (pl Tg x) \cdot dx = \frac{\pi^2}{4} \frac{e^{\frac{1}{2}p\pi} - e^{-\frac{1}{2}p\pi}}{(e^{\frac{1}{2}p\pi} + e^{-\frac{1}{2}p\pi})^2} \text{ V. T. 402, N. 5.}$$

$$2) \int \sin (pl Tg x) \cdot (Tg^q x - Cot^q x) dx = \pi \sin \frac{1}{2} q \pi \frac{e^{\frac{1}{2}p\pi} - e^{-\frac{1}{2}p\pi}}{e^{p\pi} + 2 \cos q \pi + e^{-p\pi}} [p^2 < 1, q^2 < 1]$$

V. T. 402, N. 7.

$$3) \int \sin^2 (pl Tg x) \cdot dx = \frac{\pi}{8} \frac{(e^{p\pi} - 1)^2}{e^{2p\pi} + 1} \text{ V. T. 402, N. 15.}$$

$$4) \int \cos (pl Tg x) \cdot dx = \frac{\pi}{2} \frac{e^{\frac{1}{2}p\pi}}{e^{p\pi} + 1} \text{ V. T. 402, N. 6.}$$

$$5) \int \cos^2 (pl Tg x) \cdot dx = \frac{\pi}{8} \frac{(e^{p\pi} + 1)^2}{e^{2p\pi} + 1} \text{ V. T. 402, N. 16.}$$

$$6) \int \cos (pl Tg x) \cdot (Tg^q x + Cot^q x) dx = \pi \cos \frac{1}{2} q \pi \frac{e^{\frac{1}{2}p\pi} + e^{-\frac{1}{2}p\pi}}{e^{p\pi} + 2 \cos q \pi + e^{-p\pi}} [p^2 < 1, q^2 < 1]$$

V. T. 402, N. 8.

$$7) \int \sin (pl Tg x) \frac{dx}{\cos 2x} = \frac{\pi}{4} \frac{1 - e^{p\pi}}{1 + e^{p\pi}} \text{ V. T. 402, N. 9.}$$

$$8) \int \sin (pl Tg x) \frac{dx}{\sin 4x} = \frac{\pi}{8} \frac{1 + e^{p\pi}}{1 - e^{p\pi}} \text{ V. T. 403, N. 2.}$$

$$9) \int \sin (pl Tg x) \frac{Tg^{q-1} x}{\cos 2x} dx = - \sum_{n=1}^{\infty} \frac{p}{(2n+q)^2 + p^2} \text{ V. T. 402, N. 11.}$$

$$10) \int \sin (pl Tg x) \cdot Tg \left(\frac{\pi}{4} + x \right) \frac{dx}{\sin 2x} = \frac{\pi}{2} \frac{1 + e^{2p\pi}}{1 - e^{2p\pi}} \text{ V. T. 403, N. 2.}$$

$$11) \int \sin (pl Tg x) \cdot Tg \left(\frac{\pi}{4} - x \right) \frac{dx}{\sin 2x} = \frac{-\pi}{e^{p\pi} - e^{-p\pi}} \text{ V. T. 403, N. 1.}$$

$$12) \int \sin (pl Tg x) \frac{Tg^q x + Cot^q x}{\cos 2x} dx = - \frac{\pi}{2} \frac{e^{p\pi} - e^{-p\pi}}{e^{p\pi} + 2 \cos q \pi + e^{-p\pi}} [q^2 \leq 1] \text{ V. T. 402, N. 12}$$

- 13) $\int \frac{\cos(pl Tg x)}{l Tg x} \frac{dx}{\cos 2x} = \frac{1}{4} l(e^{\frac{1}{2}p\pi} + e^{-\frac{1}{2}p\pi})$ V. T. 405, N. 14.
- 14) $\int \cos(pl Tg x) \frac{l Tg x}{\sin 4x} dx = \frac{1}{4} \pi^2 \frac{e^{p\pi}}{(1 - e^{p\pi})^2}$ V. T. 403, N. 4.
- 15) $\int l Tg x \cdot \cos(pl Tg x) \frac{dx}{\cos 2x} = \frac{1}{2} \pi^2 \frac{e^{p\pi}}{(e^{p\pi} + 1)^2}$ V. T. 402, N. 13.
- 16) $\int \cos(pl Tg x) \cdot Tg\left(\frac{\pi}{4} - x\right) \frac{l Tg x}{\sin 2x} dx = \pi^2 e^{-p\pi} \frac{1 + e^{-2p\pi}}{(1 - e^{-2p\pi})^2}$ V. T. 403, N. 3.
- 17) $\int \cos(pl Tg x) \frac{Tg^2 x - \cot^2 x}{\cos 2x} dx = \frac{-\pi \sin q\pi}{e^{p\pi} + 2 \cos q\pi + e^{-p\pi}}$ V. T. 402, N. 14.
- 18) $\int \sin(pl Tg x) \frac{1}{1 + \cos \lambda \cdot \sin 2x} \frac{dx}{Tg 2x} = -\frac{\pi}{2} \frac{e^{p\lambda} + e^{-p\lambda}}{e^{p\pi} - e^{-p\pi}}$ V. T. 404, N. 10.
- 19) $\int \cos(pl Tg x) \frac{dx}{1 + \cos \lambda \cdot \sin 2x} = \frac{\pi}{2} \operatorname{Cosec} \lambda \frac{e^{p\lambda} - e^{-p\lambda}}{e^{p\pi} - e^{-p\pi}}$ V. T. 404, N. 6.
- 20) $\int \cos(pl Tg x) \frac{1}{1 + \cos \lambda \cdot \sin 2x} \frac{dx}{\sin 2x} = -\frac{\pi}{2} \cot \lambda \frac{e^{p\lambda} - e^{-p\lambda}}{e^{p\pi} - e^{-p\pi}}$ V. T. 404, N. 11.
- 21) $\int \sin(pl Tg x) \frac{dx}{l Tg x} = \operatorname{Arctg}(e^{\frac{1}{2}p\pi})$ V. T. 405, N. 13.
- 22) $\int \cos(pl Tg x) \frac{dx}{Tg 2x \cdot l Tg x} = \frac{1}{2} l \frac{1 - e^{-\frac{1}{2}p\pi}}{1 + e^{-\frac{1}{2}p\pi}}$ V. T. 405, N. 15.
- 23) $\int \cos(pl Tg x) \frac{dx}{\sin 4x \cdot l Tg x} = -\frac{1}{4} l(e^{\frac{1}{2}p\pi} - e^{-\frac{1}{2}p\pi})$ V. T. 405, N. 16.
- 24) $\int \frac{dx}{\sqrt{l \cot x}} = \sqrt{\pi} \cdot \sum_0^{\infty} \frac{(-1)^n}{\sqrt{2n+1}}$ V. T. 133, N. 2.
- 25) $\int \frac{l l \cot x}{\sqrt{l \cot x}} dx = \sqrt{\pi} \cdot \sum_0^{\infty} (-1)^{n+1} \frac{l(2n+1) + 2l2 + A}{\sqrt{2n+1}}$ V. T. 147, N. 4.
- 26) $\int \frac{\sin^{p-1} x}{\cos^{p+1} x \cdot \sqrt{l \cot x}} dx = \sqrt{\frac{\pi}{p+1}}$ V. T. 144, N. 10.
- 27) $\int \frac{Tg^p x}{\sin 2x \cdot \sqrt{l \cot x}} dx = \frac{1}{2} \sqrt{\frac{\pi}{p}}$ V. T. 133, N. 1.
- 28) $\int \frac{l l \cot x \cdot Tg^p x}{\sin 2x \cdot \sqrt{l \cot x}} dx = -\frac{1}{2} \sqrt{\frac{\pi}{q}} \cdot (A + 2l2 + lp)$ V. T. 147, N. 3.

$$29) \int \frac{1}{2 + \sin 2x} \frac{dx}{\sqrt{l \cot x}} = \frac{1}{2} \operatorname{Cosec} \frac{\pi}{3} \cdot \sqrt{\pi} \cdot \sum_1^{\infty} (-1)^{n-1} \sin \frac{n\pi}{3} \cdot \frac{1}{\sqrt{n}} \quad \text{V. T. 133, N. 3.}$$

$$30) \int \frac{l \cot x}{2 + \sin 2x} \frac{dx}{\sqrt{l \cot x}} = \frac{1}{2} \operatorname{Cosec} \frac{\pi}{3} \cdot \sqrt{\pi} \cdot \sum_1^{\infty} (-1)^n \sin \frac{n\pi}{3} \cdot \frac{l n + 2 l 2 + A}{\sqrt{n}} \quad \text{V. T. 147, N. 8.}$$

$$1) \int l \sin x \cdot dx = -\frac{1}{2} \pi l 2 \quad (\text{VIII, 256}). \quad 2) \int l((\sin x)) \cdot dx = -\frac{1}{2} \pi l 2 + k \pi^2 i \quad (\text{VIII, 258}).$$

$$3) \int l((- \sin x)) \cdot dx = -\frac{1}{2} \pi l 2 + (2k + 1) \frac{1}{2} \pi^2 i \quad (\text{VIII, 258}).$$

$$4) \int l \sin x \cdot \sin x \, dx = l 2 - 1 \quad (\text{VIII, 685}).$$

$$5) \int l \sin x \cdot \cos x \, dx = -1 \quad (\text{VIII, 423}).$$

$$6) \int l \sin x \cdot \cos q x \, dx = -\frac{\pi}{8q} [q > 1] \quad (\text{IV, 462*}).$$

$$7) \int l \sin x \cdot \sin^2 x \, dx = \frac{1}{8} \pi (1 - 2 l 2) \quad (\text{VIII, 544}).$$

$$8) \int l \sin x \cdot \cos^2 x \, dx = -\frac{1}{8} \pi (1 + 2 l 2) \quad (\text{VIII, 685}).$$

$$9) \int l \sin x \cdot \sin x \cdot \cos^2 x \, dx = \frac{1}{9} (3 l 2 - 4) \quad (\text{VIII, 685}).$$

$$10) \int l \sin x \cdot \cos 2x \, dx = -\frac{1}{4} \pi \quad \text{V. T. 305, N. 7, 8.}$$

$$11) \int l \sin x \cdot \operatorname{Tg} x \, dx = -\frac{1}{24} \pi^2 \quad (\text{VIII, 544}).$$

$$12) \int l \sin x \cdot \sin^{2a} x \, dx = -\frac{3^{a-1/2}}{1^{a/2}} \frac{\pi}{2} \left\{ l 2 + \sum_1^{2a} \frac{(-1)^n}{n} \right\} \quad (\text{VIII, 685}).$$

$$13) \int l \sin x \cdot \sin^{2a-1} x \, dx = \frac{2^{a-1/2}}{1^{a/2}} \left\{ l 2 + \sum_1^{2a-1} \frac{(-1)^n}{n} \right\} \quad (\text{VIII, 685}).$$

$$14) \int l \sin x \cdot \cos^{2a} x \, dx = -\frac{1^{a/2}}{2^{a+1} 1^{a/2}} \pi \{ A + Z'(a+1) + 2 l 2 \} \quad \text{V. T. 117, N. 3.}$$

$$15) \int l \sin x \cdot \sin^2 x \cdot \cos x \, dx = -\frac{1}{(q+1)^2} \quad \text{V. T. 107, N. 1.}$$

F. Log. en num. $(l \sin x)^a$;
Circ. Dir. rat. ent.

TABLE 305, suite.

Lim. 0 et $\frac{\pi}{2}$.

$$16) \int l \sin 2x \cdot \sin x dx = 2(l2 - 1) \text{ (VIII, 423).}$$

$$17) \int l \sin 2x \cdot \cos x dx = 2(l2 - 1) \text{ (VIII, 423).}$$

$$18) \int l \sin x \cdot \cos(p \sin x) \cdot \cos x dx = -\frac{1}{p} Si(p) \text{ V. T. 52, N. 10.}$$

$$19) \int (l \sin x)^2 dx = \frac{\pi}{2} \left\{ (l2)^2 + \frac{1}{12} \pi^2 \right\} \text{ V. T. 118, N. 13.}$$

$$20) \int (l \sin x)^3 \cdot Tg x dx = -\frac{1}{240} \pi^4 \text{ V. T. 109, N. 11.}$$

$$21) \int (l \sin x)^5 \cdot Tg x dx = -\frac{1}{504} \pi^6 \text{ V. T. 109, N. 21.}$$

$$22) \int (l \sin x)^p \cdot \cos x dx = \cos p\pi \cdot \Gamma(p+1) \text{ V. T. 30, N. 2.}$$

$$23) \int (l \sin x)^{2a-1} \cdot Tg x dx = -\frac{1}{4a} \pi^{2a} B_{2a-1} \text{ V. T. 110, N. 5.}$$

$$24) \int (l \sin x)^{a-1} \cdot Tg x dx = (-1)^{a-1} 2^{-a} l^{a-1/2} \sum_1^{\infty} \frac{1}{n^a} \text{ V. T. 110, N. 6.}$$

$$25) \int (l \sin x)^q \cdot \sin^{p-1} x \cdot \cos x dx = \frac{\cos q\pi}{p^{q+1}} \Gamma(q+1) \text{ V. T. 107, N. 3.}$$

$$26) \int (l \sin x)^{a-1} \cdot \sin^{2q} x \cdot Tg x dx = (-1)^{a-1} 2^{-a} l^{a-1/2} \sum_1^{\infty} \frac{1}{(q+n)^a} \text{ V. T. 110, N. 7.}$$

F. Log. en num. $(l \cos x)^a$;
Circ. Dir. rat. ent.

TABLE 306.

Lim. 0 et $\frac{\pi}{2}$.

$$1) \int l \cos x \cdot dx = -\frac{1}{2} \pi l2 \text{ (VIII, 256).}$$

$$2) \int l \cos x \cdot \sin x dx = -1 \text{ (VIII, 423).}$$

$$3) \int l \cos x \cdot \cos x dx = l2 - 1 \text{ (VIII, 685).}$$

$$4) \int l \cos x \cdot \sin^2 x dx = -\frac{1}{8} \pi (1 + 2l2) \text{ (VIII, 685).}$$

$$5) \int l \cos x \cdot \cos^2 x dx = \frac{1}{8} \pi (1 - 2l2) \text{ (VIII, 685).}$$

F. Log. en num. ($\ell \cos x$)^a;
Circ. Dir. rat. ent.

TABLE 306, suite.

Lim. 0 et $\frac{\pi}{2}$.

- 6) $\int \ell \cos x \cdot \cos 2x \, dx = \frac{1}{4} \pi$ V. T. 306, N. 4, 5.
- 7) $\int \ell \cos x \cdot \sin^3 x \cdot \cos x \, dx = \frac{1}{9} (3 \ell 2 - 4)$ (VIII, 685).
- 8) $\int \ell \cos x \cdot \sin^{2a} x \, dx = -\frac{1^{a/2}}{2^{a+1} 1^{a/2}} \frac{\pi}{2} \{A + 2 \ell 2 + Z'(a+1)\}$ V. T. 117, N. 3.
- 9) $\int \ell \cos x \cdot \cos^{2a-1} x \, dx = \frac{2^{a-1/2}}{1^{a/2}} \left\{ \ell 2 + \sum_1^{a-1} \frac{(-1)^n}{n} \right\}$ (VIII, 685).
- 10) $\int \ell \cos x \cdot \cos^{2a} x \, dx = -\frac{3^{a-1/2}}{2^{a/2}} \frac{\pi}{2} \left\{ \ell 2 + \sum_1^a \frac{(-1)^n}{n} \right\}$ (VIII, 685).
- 11) $\int \ell \cos x \cdot \cos^q x \cdot \sin x \, dx = \frac{-1}{(q+1)^2}$ V. T. 107, N. 1.
- 12) $\int \ell \cos x \cdot \cos^{p-1} x \cdot \sin x \cdot \sin p x \, dx = \frac{\pi}{2^{p+1}} \left\{ A + Z'(p) - \frac{1}{p} - 2 \ell 2 \right\}$ (IV, 432).
- 13) $\int \ell \cos x \cdot \cos(p \cos x) \cdot \sin x \, dx = -\frac{1}{p} \text{Si}(p)$ V. T. 43, N. 17.
- 14) $\int (\ell \cos x)^2 \, dx = \frac{1}{2} \pi \left\{ (\ell 2)^2 + \frac{1}{12} \pi^2 \right\}$ V. T. 118, N. 13.
- 15) $\int (\ell \cos x)^p \cdot \sin x \, dx = \cos p \pi \cdot \Gamma(1+p)$ V. T. 30, N. 2.
- 16) $\int (\ell \cos x)^q \cdot \cos^p x \cdot \text{Tg} x \, dx = \frac{\cos q \pi}{p^{q+1}} \Gamma(q+1)$ V. T. 107, N. 3.

F. Log. en num. ($\ell \tan x$)^a;
Circ. Dir. rat. ent.

TABLE 307.

Lim. 0 et $\frac{\pi}{2}$.

- 1) $\int \ell \text{Tg} x \cdot dx = 0$ (VIII, 257).
- 2) $\int \ell(p \text{Tg} x) \cdot dx = \frac{\pi}{2} \ell p$ V. T. 135, N. 4.
- 3) $\int \ell \text{Tg} x \cdot \sin x \, dx = \ell 2$ (VIII, 423).
- 4) $\int \ell \text{Tg} x \cdot \cos x \, dx = -\ell 2$ (VIII, 423).
- 5) $\int \ell \text{Tg} x \cdot \sin^2 x \, dx = \frac{1}{4} \pi$ V. T. 307, N. 1, 7.
- 6) $\int \ell \text{Tg} x \cdot \cos^2 x \, dx = -\frac{1}{4} \pi$ V. T. 307, N. 1, 7.

$$7) \int l Tg x. \cos 2x dx = -\frac{1}{2} \pi \text{ V. T. 305, N. 10 et T. 306, N. 6.}$$

$$8) \int l(p Tg x). \sin^{q-1} 2x dx = 2^{q-1} l p \frac{\{\Gamma(\frac{1}{2}q)\}^2}{\Gamma(q)} \text{ (VIII, 273).}$$

$$9) \int l Tg x. \cos^{2(q-1)} x dx = -\frac{\Gamma(q-\frac{1}{2})}{\Gamma(q)} \frac{1}{4} \sqrt{\pi} \left\{ A + 2 l 2 + Z' \left(\frac{2q-1}{2} \right) \right\} \text{ (IV, 434).}$$

$$10) \int l Tg x. \cos^{q-1} x. \cos \{(q+1)x\} dx = -\frac{\pi}{2q} \text{ (IV, 434).}$$

$$11) \int l Tg x. \cos^{q-1} x. \cot x. \sin \{(q+1)x\} dx = -\frac{1}{2} \pi \{A + Z'(q+1)\} \text{ (IV, 434).}$$

$$12) \int l Tg x. \sin^{2a-1} 2x. \cos 2x dx = -\frac{1}{2a} \frac{2^{a-1/2}}{3^{a-1/2}} \text{ V. T. 40, N. 2.}$$

$$13) \int (l Tg x)^2 dx = \frac{1}{8} \pi^2 \text{ V. T. 109, N. 3.}$$

$$14) \int (l Tg x)^{2a-1} dx = 0 \text{ (VIII, 286).}$$

$$15) \int (l Tg x)^{2a} dx = 2.1^{2a+1} \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^{2a+1}} \text{ (VIII, 286).}$$

$$1) \int l \sin^2 (p Tg x). dx = \pi l \frac{1-e^{-2p}}{2} \text{ V. T. 417, N. 1.}$$

$$2) \int l \cos^2 (p Tg x). dx = \pi l \frac{1+e^{-2p}}{2} \text{ V. T. 417, N. 2.}$$

$$3) \int l Tg^2 (p Tg x). dx = \pi l \frac{e^p - e^{-p}}{e^p + e^{-p}} \text{ V. T. 417, N. 3.}$$

$$4) \int l \cot^2 (p Tg x). dx = \pi l \frac{e^p + e^{-p}}{e^p - e^{-p}} \text{ V. T. 417, N. 4.}$$

$$5) \int l(1 + \cos x). dx = -\frac{1}{2} \pi l 2 + 2 \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 285, N. 1.}$$

$$6) \int l(1 - \cos x). dx = -\frac{1}{2} \pi l 2 - 2 \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 204, N. 2.}$$

$$7) \int l(1 + p \sin x)^2 dx = \pi l \frac{1 + \sqrt{1-p^2}}{2} [p^2 < 1], = -\pi l 2 p [p^2 > 1] \text{ (VIII, 356*)}$$

- 8) $\int l(1 + p \cos x)^2 dx = \pi l \frac{1 + \sqrt{1-p^2}}{2} [p^2 < 1], = -\pi l 2p [p^2 > 1]$ (VIII, 356*).
- 9) $\int l(1 + \operatorname{Tg} x) dx = \frac{\pi}{4} l 2 + \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 136, N. 1.
- 10) $\int l(1 - \operatorname{Tg} x)^2 dx = \frac{\pi}{2} l 2 + 2 l \sum_0^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2}$ V. T. 136, N. 2.
- 11) $\int l(\operatorname{Tg} x + \operatorname{Cot} x) dx = \pi l 2$ V. T. 137, N. 8.
- 12) $\int l(\operatorname{Tg} x - \operatorname{Cot} x)^2 dx = \pi l 2$ V. T. 138, N. 4.
- 13) $\int l(1 + p \sin^2 x) dx = \pi l \frac{1 + \sqrt{1+p}}{2}$ (VIII, 357).
- 14) $\int l(1 + p \sin x \cdot \cos x) dx = \pi l \frac{1 + \sqrt{1+p}}{2}$ (IV, 435).
- 15) $\int l(1 + p \cos^2 x) dx = \pi l \frac{1 + \sqrt{1+p}}{2}$ (VIII, 357).
- 16) $\int l(1 + p^2 \operatorname{Tg}^2 x) dx = \pi l(1 + p)$ (VIII, 605).
- 17) $\int l(p^2 + \operatorname{Tg}^2 x) dx = \pi l(1 + p)$ (VIII, 605).
- 18) $\int l(1 + p^2 \operatorname{Cot}^2 x) dx = \pi l(1 + p)$ (VIII, 605).
- 19) $\int l\{1 + p^2 \operatorname{Tg}^2 (q \operatorname{Tg} x)\} dx = \pi l \left\{1 + p \frac{e^q - e^{-q}}{e^q + e^{-q}}\right\}$ V. T. 421, N. 1.
- 20) $\int l\{1 + p^2 \operatorname{Cot}^2 (q \operatorname{Tg} x)\} dx = \pi l \left\{1 + p \frac{e^q + e^{-q}}{e^q - e^{-q}}\right\}$ V. T. 421, N. 2.
- 21) $\int l(\operatorname{Tg}^2 x - \operatorname{Cot}^2 x)^2 dx = 3 \pi l 2$ V. T. 138, N. 17.
- 22) $\int l(\sqrt{\operatorname{Tg} x} + \sqrt{\operatorname{Cot} x}) dx = \frac{\pi}{4} l 2 + \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2}$ V. T. 137, N. 6.
- 23) $\int l(\sqrt{\operatorname{Tg} x} - \sqrt{\operatorname{Cot} x})^2 dx = \frac{\pi}{2} l 2 + 2 \sum_0^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2}$ V. T. 137, N. 7.
- 24) $\int l(1 + 2p \sin x + p^2) dx = \sum_0^{\infty} \frac{1}{2n+1} \frac{2^{n/2}}{3^{n/2}} \left(\frac{2p}{1+p^2}\right)^{n+1} [p \leq 1]$ V. T. 208, N. 29.

$$25) \int l \left\{ 1 + 2p \cos \left(q \operatorname{Tg} \frac{x}{r} \right) + p^2 \right\} dx = \pi l (1 + p e^{-qr}) [p^2 \leq 1], = \pi l (p + e^{-qr}) [p^2 \geq 1]$$

V. T. 421, N. 11.

$$26) \int l \left(\frac{\cos 2x}{\cos^2 x} \right)^2 dx = \pi l 2 \quad \text{V. T. 136, N. 5.}$$

$$27) \int l \left(\frac{\sin x + \cos x}{\sin x - \cos x} \right)^2 dx = 4 \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2} \quad \text{V. T. 138, N. 21.}$$

$$28) \int l l \operatorname{Tg} x . dx = \frac{\pi}{2} l \left\{ \frac{\Gamma(\frac{3}{4})}{\Gamma(\frac{1}{4})} \sqrt{2} \pi \right\} \quad \text{V. T. 148, N. 1.}$$

$$29) \int l (\operatorname{Tg}^p x + \operatorname{Cot}^p x) . l \operatorname{Tg} x . dx = 0 \quad (\text{VIII, 273}).$$

$$1) \int l \cos x . \cos (p l \sin x) . \operatorname{Tg} x dx = \frac{1}{2p^2} + \frac{\pi}{2p} \frac{1 + e^{p\pi}}{1 - e^{p\pi}} \quad \text{V. T. 309, N. 25.}$$

$$2) \int (l \sin x)^2 . \sin (p l \cos x) . \operatorname{Tg} x dx = \infty \quad \text{V. T. 310, N. 16.}$$

$$3) \int l \sin x . (l \cos x)^2 . \operatorname{Tg} x dx = -\frac{1}{720} \pi^4 \quad \text{V. T. 311, N. 7.}$$

$$4) \int l \sin x . (l \cos x)^4 . \operatorname{Tg} x dx = -\frac{1}{2520} \pi^6 \quad \text{V. T. 311, N. 9.}$$

$$5) \int l \sin x . (l \cos x)^{2a} . \operatorname{Tg} x dx = -\frac{1}{4} \frac{\pi^{2a+2}}{(a+1)(2a+1)} B_{2a+1} \quad \text{V. T. 311, N. 13.}$$

$$6) \int l \operatorname{Tg}^2 \left(\frac{\pi}{4} \pm x \right) . \sin 2x dx = \pm \pi \quad \text{V. T. 45, N. 25.}$$

$$7) \int l \operatorname{Tg}^2 \left(\frac{\pi}{4} \pm x \right) . \operatorname{Tg} x dx = \pm \frac{1}{2} \pi^2 \quad \text{V. T. 141, N. 13.}$$

$$8) \int l (p \operatorname{Tg} x) . \sin (q \operatorname{Tg} x) . \operatorname{Tg} x dx = \frac{\pi}{4} e^{-q} \{ 2lp - Ei(q) \} - \frac{\pi}{4} e^q Ei(-q) \quad \text{V. T. 422, N. 1.}$$

$$9) \int l (p \operatorname{Tg} x) . \cos (q \operatorname{Tg} x) dx = \frac{\pi}{4q} e^{-q} \{ 2lp - Ei(q) \} + \frac{\pi}{4q} e^q Ei(-q) \quad \text{V. T. 422, N. 2.}$$

$$10) \int l (p \operatorname{Tg} x) . \cos (q \operatorname{Cot} x) dx = \frac{\pi}{4q} \{ e^{-q} Ei(q) - e^q Ei(-q) \} + \frac{\pi}{4q} e^{-q} lp \quad \text{V. T. 422, N. 4.}$$

- 11) $\int l(p \cot x) \cdot \sin(q \operatorname{Tg} x) \cdot \operatorname{Tg} x dx = \frac{\pi}{4} \{e^{-q} Ei(q) + e^q Ei(-q)\} + \frac{\pi}{2} e^{-q} l p$ V. T. 422, N. 3.
- 12) $\int l(p \cot x) \cdot \cos(q \operatorname{Tg} x) dx = \frac{\pi}{4q} \{e^{-q} Ei(q) - e^q Ei(-q)\} + \frac{\pi}{2q} e^{-q} l p$ V. T. 422, N. 4.
- 13) $\int l(p \cot x) \cdot \cos(q \cot x) dx = \frac{\pi}{4q} e^{-q} \{2 l p - Ei(q)\} + \frac{\pi}{4q} e^q Ei(-q)$ V. T. 422, N. 2.
- 14) $\int l(1 + p \sin^2 x) \cdot \sin^2 x dx = \frac{\pi}{2} \left\{ l \frac{1 + \sqrt{1+p}}{2} - \frac{1}{2} \frac{1 - \sqrt{1+p}}{1 + \sqrt{1+p}} \right\}$ (VIII, 358).
- 15) $\int l(1 + p \sin^2 x) \cdot \cos^2 x dx = \frac{\pi}{2} \left\{ l \frac{1 + \sqrt{1+p}}{2} + \frac{1}{2} \frac{1 - \sqrt{1+p}}{1 + \sqrt{1+p}} \right\}$ (VIII, 358).
- 16) $\int l(1 + p \sin^2 x) \cdot \cos 2x dx = \frac{\pi}{2} \frac{1 - \sqrt{1+p}}{1 + \sqrt{1+p}}$ V. T. 308, N. 13 et T. 309, N. 14.
- 17) $\int l(1 + p \cos^2 x) \cdot \sin^2 x dx = \frac{\pi}{2} \left\{ l \frac{1 + \sqrt{1+p}}{2} + \frac{1}{2} \frac{1 - \sqrt{1+p}}{1 + \sqrt{1+p}} \right\}$ (VIII, 358).
- 18) $\int l(1 + p \cos^2 x) \cdot \cos^2 x dx = \frac{\pi}{2} \left\{ l \frac{1 + \sqrt{1+p}}{2} - \frac{1}{2} \frac{1 - \sqrt{1+p}}{1 + \sqrt{1+p}} \right\}$ (VIII, 358).
- 19) $\int l(1 + p \cos^2 x) \cdot \cos 2x dx = \pi \frac{1 - \sqrt{1+p}}{p} + \frac{1}{2} \pi$ V. T. 308, N. 15 et T. 309, N. 17.
- 20) $\int l(1 + \cos^p x) \cdot \operatorname{Tg} x dx = \frac{1}{12p} \pi^2$ V. T. 114, N. 30.
- 21) $\int l(1 - \cos^p x) \cdot \operatorname{Tg} x dx = -\frac{1}{6p} \pi^2$ V. T. 114, N. 31.
- 22) $\int l(1 + 2p \cos 2x + p^2) \cdot \sin^2 x dx = -\frac{1}{4} p \pi [p^2 < 1], = \frac{\pi}{4} l p^2 - \frac{1}{4} p \pi [p^2 > 1]$ (VIII, 276).
- 23) $\int l(1 + 2p \cos 2x + p^2) \cdot \cos^2 x dx = \frac{1}{4} p \pi [p^2 < 1], = \frac{1}{4} p \pi + \frac{1}{4} \pi l p^2 [p^2 > 1]$ (VIII, 276).
- 24) $\int l(r \operatorname{Tg} x) \cdot \sin^{q-1} 2x dx = 2^{q-1} l r \frac{\{\Gamma(\frac{1}{2}q)\}^2}{\Gamma(q)}$ (VIII, 278).
- 25) $\int \operatorname{Tg} x \cdot \sin(pl \sin x) dx = \frac{1}{2p} + \frac{\pi}{2} \frac{1 + e^{p\pi}}{1 - e^{p\pi}}$ V. T. 402, N. 10.
- 26) $\int \sin^{q-1} x \cdot \operatorname{Tg} x \cdot \sin(pl \sin x) dx = -\sum_1^{\infty} \frac{p}{(2\pi + q)^2 + p^2}$ V. T. 402, N. 11.

- 1) $\int \int \sin x \frac{dx}{\cos x} = -\frac{1}{8} \pi^2$ V. T. 108, N. 11. 2) $\int \int \sin x \frac{dx}{\cos 2x} = -\frac{1}{8} \pi^2$ (VIII, 544).
- 3) $\int \int \sin x \frac{dx}{\operatorname{Tg}^{p-1} x \cdot \sin 2x} = \frac{1}{4} \frac{\pi}{p-1} \operatorname{Sec} \frac{1}{2} p \pi [p < 1]$ V. T. 45, N. 19.
- 4) $\int \int \sin x \frac{\sin^{p-1} x}{\cos^{p+1} x} dx = -\frac{\pi}{2p} \operatorname{Cosec} \frac{1}{2} p \pi \left[0 < p < \frac{1}{2} \right]$ V. T. 42, N. 1.
- 5) $\int (\int \sin x)^2 \frac{dx}{\cos x} = -\frac{1}{16} \pi^2$ V. T. 109, N. 13.
- 6) $\int (\int \sin x)^3 \frac{dx}{\cos x} = -\frac{1}{8} \pi^2$ V. T. 109, N. 22.
- 7) $\int (\int \sin x)^7 \frac{dx}{\cos x} = -\frac{17}{32} \pi^2$ V. T. 109, N. 30.
- 8) $\int (\int \sin x)^{2a} \frac{dx}{\cos x} = \frac{2^{2a+1} - 1}{2^{2a+2}} 1^{2a+1} \sum_{n=1}^{\infty} \frac{1}{n^{2a+1}}$ V. T. 110, N. 12.
- 9) $\int (\int \sin x)^{2a-1} \frac{dx}{\cos x} = \frac{2^{2a} - 1}{4a} \pi^{2a} B_{2a-1}$ V. T. 112, N. 9.
- 10) $\int (\int \sin x)^{a-1} \frac{dx}{\cos x} = (-1)^{a-1} 1^{a-1/2} \sum_{n=0}^{\infty} \frac{1}{(2n+1)^a}$ (VIII, 577).
- 11) $\int (\int \sin x)^{a-1} \frac{\sin^q x}{\cos x} dx = (-1)^{a-1} 1^{a-1/2} \sum_{n=0}^{\infty} \frac{1}{(2n+q+1)^a}$ (VIII, 577).
- 12) $\int \int \sin x \cdot \cos(p \operatorname{Tg} x) \frac{dx}{\cos^2 x} = \pi \frac{e^{-p} - 1}{2p}$ V. T. 51, N. 2.
- 13) $\int \int \sin x \cdot \sin(p \operatorname{Cot} x) \frac{dx}{\sin^2 x} = \infty$ V. T. 43, N. 6.
- 14) $\int \int \sin x \cdot \sin(p \operatorname{Cot} x) \frac{dx}{\sin 2x} = -\frac{\pi}{4} \operatorname{Ei}(-p)$ V. T. 411, N. 9.
- 15) $\int \int \sin x \cdot \cos(p \operatorname{Cot} x) \frac{dx}{\sin^2 x} = \infty$ V. T. 43, N. 5.
- 16) $\int \int \sin x \cdot \cos(p \int \cos x) \frac{dx}{\operatorname{Tg} x} = \frac{1}{2p^2} + \frac{\pi}{2p} \frac{1 + e^{p\pi}}{1 - e^{p\pi}}$ V. T. 309, N. 25.

- 1) $\int l \cos x \frac{dx}{\sin x} = -\frac{1}{8} \pi^2$ V. T. 108, N. 11. 2) $\int l \cos x \frac{dx}{\cos 2x} = \frac{1}{8} \pi^2$ (VIII, 544).
- 3) $\int l \cos x \frac{dx}{Tg x} = -\frac{1}{24} \pi^2$ V. T. 305, N. 11.
- 4) $\int l \cos x \frac{Tg^{p-1} x}{\sin 2x} dx = \frac{\pi}{4(p-1)} \sec \frac{1}{2} p \pi$ [$p < 1$] V. T. 45, N. 19.
- 5) $\int l \cos x \frac{\cos^{p-1} x}{\sin^{p+1} x} dx = -\frac{\pi}{2p} \operatorname{Cosec} \frac{1}{2} p \pi$ [$p < \frac{1}{2}$] V. T. 42, N. 1.
- 6) $\int (l \cos x)^2 \frac{dx}{\sin x} = -\frac{1}{16} \pi^2$ V. T. 109, N. 13.
- 7) $\int (l \cos x)^2 \frac{dx}{Tg x} = -\frac{1}{240} \pi^2$ V. T. 109, N. 11.
- 8) $\int (l \cos x)^2 \frac{dx}{\sin x} = -\frac{1}{8} \pi^2$ V. T. 109, N. 22.
- 9) $\int (l \cos x)^2 \frac{dx}{Tg x} = -\frac{1}{504} \pi^2$ V. T. 109, N. 21.
- 10) $\int (l \cos x)^2 \frac{dx}{\sin x} = -\frac{17}{32} \pi^2$ V. T. 109, N. 30.
- 11) $\int (l \cos x)^{2a-1} \frac{dx}{\sin x} = \frac{1-2^{2a}}{4a} \pi^{2a} B_{2a-1}$ V. T. 112, N. 9.
- 12) $\int (l \cos x)^{2a} \frac{dx}{\sin x} = \frac{2^{2a+1}-1}{2^{2a+1}} 1^{2a/1} \sum_1^{\infty} \frac{1}{n^{2a+1}}$ V. T. 110, N. 12.
- 13) $\int (l \cos x)^{2a-1} \frac{dx}{Tg x} = -\frac{\pi^{2a}}{4a} B_{2a-1}$ V. T. 110, N. 5.
- 14) $\int (l \cos x)^{a-1} \frac{dx}{Tg x} = (-1)^{a-1} 2^{-a} 1^{a-1/1} \sum_0^{\infty} \frac{1}{(n+1)^a}$ V. T. 110, N. 6.
- 15) $\int (l \cos x)^{a-1} \sin^{2q} x \frac{dx}{Tg x} = (-1)^{a-1} 2^{-a} 1^{a-1/1} \sum_0^{\infty} \frac{1}{(q+n+1)^a}$ V. T. 110, N. 7.
- 16) $\int (l \cos x)^{p-1} \cos^{q-1} x \frac{dx}{Tg x} = -\cos p \pi \Gamma(p) \sum_0^{\infty} \frac{1}{(q+2n+1)^p}$ V. T. 110, N. 13.
- 17) $\int l \cos x \cdot \sin(p Tg x) \frac{dx}{\sin 2x} = -\frac{\pi}{4} Ei(-p)$ V. T. 411, N. 9.
- 18) $\int l \cos x \cdot \sin(p Tg x) \frac{dx}{\cos^2 x} = \infty$ V. T. 43, N. 6.

F. Log. en num. $(l \cos x)^a$;
Circ. Dir. rat. en dén. mon. TABLE 311, suite.

Lim. 0 et $\frac{\pi}{2}$.

$$19) \int l \cos x \cdot \cos(p \operatorname{Tg} x) \frac{dx}{\cos^2 x} = \infty \text{ V. T. 43, N. 5.}$$

$$20) \int l \cos x \cdot \cos(p \cot x) \frac{dx}{\sin^2 x} = -\frac{\pi}{2p} (1 - e^{-q}) \text{ V. T. 43, N. 18.}$$

$$21) \int (l \cos x)^2 \cdot \sin(p l \sin x) \frac{dx}{\operatorname{Tg} x} = \infty \text{ V. T. 310, N. 16.}$$

F. Log. en num. $(l \operatorname{Tang} x)^a$;
Circ. Dir. rat. en dén. mon. TABLE 312.

Lim. 0 et $\frac{\pi}{2}$.

$$1) \int l \operatorname{Tg} x \frac{dx}{\cos 2x} = -\frac{1}{4} \pi^2 \text{ (VIII, 544).}$$

$$2) \int l \operatorname{Tg} x \frac{\operatorname{Tg}^p x}{\cos 2x} dx = -\left\{ \frac{\pi}{2} \operatorname{Cosec} \left(\frac{p+1}{2} \pi \right) \right\}^2 [p^2 < 1] \text{ V. T. 135, N. 8.}$$

$$3) \int l \operatorname{Tg} x \frac{dx}{\cos 2x \cdot \operatorname{Tg}^p x} = -\left\{ \frac{\pi}{2} \operatorname{Cosec} \left(\frac{p+1}{2} \pi \right) \right\}^2 [p^2 < 1] \text{ V. T. 135, N. 8.}$$

$$4) \int l \operatorname{Tg} x \frac{1 - \operatorname{Tg}^p x}{\cos 2x} dx = \left(\frac{\pi}{2} \operatorname{Tg} \frac{1}{2} p \pi \right)^2 [p^2 < 1] \text{ V. T. 135, N. 9.}$$

$$5) \int (l \operatorname{Tg} x)^3 \frac{dx}{\cos 2x} = -\frac{1}{8} \pi^2 \text{ V. T. 290, N. 9.}$$

$$6) \int (l \operatorname{Tg} x)^{2a-1} \frac{dx}{\cos 2x} = \frac{1-2^{2a}}{2a} \pi^{2a} B_{2a-1} \text{ V. T. 290, N. 17.}$$

$$7) \int (l \operatorname{Tg} x)^{2a} \frac{dx}{\cos 2x} = 0 \text{ V. T. 290, N. 18.}$$

$$8) \int l(p \operatorname{Tg} x) \cdot \sin(q \operatorname{Tg} x) \frac{dx}{\sin 2x} = \frac{\pi}{4} \left\{ l \frac{p}{q} - A \right\} \text{ V. T. 411, N. 1.}$$

F. Log. en num. de fonction bin.; TABLE 313.
Circ. Dir. rat. en dén. mon.

Lim. 0 et $\frac{\pi}{2}$.

$$1) \int l(1 + p \sin x) \frac{dx}{\sin x} = \frac{1}{8} \pi^2 - \frac{1}{2} (\operatorname{Arccos} p)^2 [p^2 < 1] \text{ V. T. 313, N. 8.}$$

$$2) \int l(1 + \sin x) \frac{\cos x}{3 - \cos 2x} dx = \frac{\pi}{16} l 2 \text{ V. T. 114, N. 3.}$$

$$3) \int l(1 + p \sin x) \frac{\cos^2 x}{(3 - \cos 2x)^2} dx = \frac{1}{8} \frac{1}{1+p^2} \left\{ (1+p)^2 l(1+p) - p l 2 - \frac{1}{2} p^2 \pi \right\}$$

V. T. 114, N. 23.

$$4) \int l(1 + \sin^p x) \frac{dx}{\operatorname{Tg} x} = \frac{1}{12p} \pi^2 \quad \text{V. T. 114, N. 30.}$$

$$5) \int l(1 - \sin^p x) \frac{dx}{\operatorname{Tg} x} = -\frac{1}{6p} \pi^2 \quad \text{V. T. 114, N. 31.}$$

$$6) \int l(1 + p \sqrt{\sin 2x}) \frac{dx}{\sin x} = \frac{1}{4} \pi^2 - (\operatorname{Arccos} p)^2 [p^2 < 1] \quad (\text{VIII, 423}).$$

$$7) \int l(1 + p \sqrt{\sin 2x}) \frac{dx}{\cos x} = \frac{1}{4} \pi^2 - (\operatorname{Arccos} p)^2 [p^2 < 1] \quad (\text{VIII, 423}).$$

$$8) \int l(1 + p \cos x) \frac{dx}{\cos x} = \frac{1}{8} \pi^2 - \frac{1}{2} (\operatorname{Arccos} p)^2 [p^2 < 1] \quad (\text{VIII, 582}).$$

$$9) \int l(1 + \cos x) \frac{\sin x}{3 + \cos 2x} dx = \frac{\pi}{16} l 2 \quad \text{V. T. 114, N. 3.}$$

$$10) \int l(1 + p \cos x) \frac{\sin^2 x}{(3 + \cos 2x)^2} dx = \frac{1}{8(1+p^2)} \left\{ (1+p)^2 l(1+p) - p l 2 - \frac{1}{2} p^2 \pi \right\}$$

V. T. 114, N. 23.

$$11) \int l(p^2 \cos^2 x + q^2 \sin^2 x) \frac{dx}{\cos^2 x} = \infty \quad (\text{VIII, 591}).$$

$$12) \int l(1 + p^2 \operatorname{Tg}^2 x) \frac{dx}{\cos 2x} = -\pi \operatorname{Arctg} p \quad (\text{VIII, 360}).$$

$$13) \int l(p^2 + \operatorname{Tg}^2 x) \frac{dx}{\cos 2x} = -\pi \operatorname{Arccot} p \quad (\text{VIII, 360}).$$

$$14) \int l(1 + p^2 \operatorname{Cot}^2 x) \frac{dx}{\cos 2x} = \pi \operatorname{Arctg} p \quad (\text{VIII, 360}).$$

$$15) \int l(p^2 + \operatorname{Cot}^2 x) \frac{dx}{\cos 2x} = \pi \operatorname{Arccot} p \quad (\text{VIII, 360}).$$

$$16) \int [l(1 + p^2 \operatorname{Tg}^2 x)]^2 \frac{dx}{\sin^2 x} = 4p\pi l 2 \quad (\text{VIII, 608}).$$

$$17) \int [l(1 + p^2 \operatorname{Cot}^2 x)]^2 \frac{dx}{\cos^2 x} = 4p\pi l 2 \quad (\text{VIII, 608}).$$

- 1) $\int l(\sin x \cdot \cos x) \frac{dx}{\cos 2x} = 0$ (VIII, 544).
- 2) $\int l Tg^2 \left(\frac{\pi}{4} \pm x \right) \frac{Tg^{p-1} x}{\sin 2x} dx = \pm \frac{\pi}{1-p} \cot \frac{1}{2} p \pi$ V. T. 45, N. 27.
- 3) $\int l Tg^2 \left(\frac{\pi}{4} \pm x \right) \frac{dx}{Tg x} = \pm \frac{1}{2} \pi^2$ V. T. 141, N. 13.
- 4) $\int l Tg^2 \left(\frac{\pi}{4} \pm x \right) \frac{dx}{Tg^{p-1} x \cdot \sin 2x} = \pm \frac{\pi}{1-p} \cot \frac{1}{2} p \pi$ V. T. 45, N. 29.
- 5) $\int l \sin (p Tg x) \frac{dx}{\cos 2x} = \frac{1}{2} p \pi - \frac{1}{4} \pi^2$ V. T. 418, N. 1.
- 6) $\int l \cos (p Tg x) \frac{dx}{\cos 2x} = \frac{1}{2} p \pi$ V. T. 418, N. 2.
- 7) $\int l Tg (p Tg x) \frac{dx}{\cos 2x} = -\frac{1}{4} \pi^2$ V. T. 418, N. 3.
- 8) $\int l (p Tg x) \frac{dx}{\sin^{q-1} 2x} = 2^{q-1} l p \frac{\{\Gamma(\frac{1}{2} q)\}^2}{\Gamma(q)}$ V. T. 140, N. 6.
- 9) $\int l (p Tg x) \cdot \sin (q \cot x) \frac{dx}{Tg x} = \frac{\pi}{4} \{e^{-q} Ei(q) + e^q Ei(-q)\} + \frac{\pi}{2} e^{-q} l p$ V. T. 422, N. 3.
- 10) $\int l (p Tg x) \cdot \sin (q \cot x) \frac{\cot x dx}{\cos 2x} = \frac{\pi}{2} \{ \cos q \cdot l p + Ci(q) \cdot \cos q + Si(q) \cdot \sin q - \frac{\pi}{2} \sin q \}$ V. T. 422, N. 5.
- 11) $\int l (p \cot x) \cdot \sin (q \cot x) \frac{dx}{Tg x} = \frac{\pi}{4} \{e^{-q} \{2 l p - Ei(p)\} - \frac{\pi}{4} e^q Ei(-q)\}$ V. T. 422, N. 1.
- 12) $\int l (p Tg x) \cdot \cos (q \cot x) \frac{dx}{\cos 2x} = -\frac{\pi}{2} \{-\sin q \cdot l p + Si(q) \cdot \cos q + \frac{\pi}{2} \cos q\}$ V. T. 422, N. 6.
- 13) $\int l Tg^2 \left(\frac{\pi}{4} \pm x \right) \cdot \sin (q \cot x) \frac{dx}{\sin^2 x} = \pm \frac{2\pi}{q} \sin q$ V. T. 51, N. 9.
- 14) $\int l Tg^2 \left(\frac{\pi}{4} \pm x \right) \cdot \sin (q Tg x) \frac{dx}{\cos^2 x} = \pm \frac{2\pi}{q} \sin q$ V. T. 52, N. 6.
- 15) $\int l Tg^2 \left(\frac{\pi}{4} \pm x \right) \cdot \cos (q Tg x) \frac{dx}{\cos^2 x} = \pm \frac{2}{q} \{Si(q) \cdot \cos q - Ci(q) \cdot \sin q\}$ V. T. 51, N. 3.
- 16) $\int l Tg^2 \left(\frac{\pi}{4} \pm x \right) \cdot Tg (q Tg x) \frac{dx}{\cos^2 x} = \pm 2\pi$ V. T. 314, N. 6.

$$17) \int l Tg^2 \left(\frac{\pi}{4} \pm x \right) \cdot \text{Cot}(q Tg x) \frac{dx}{\text{Cos}^2 x} = \pm \frac{\pi - 2q}{q} \pi \text{ V. T. 314, N. 5.}$$

$$18) \int l Tg^2 \left(\frac{\pi}{4} \pm x \right) \cdot \text{Cosec}(q Tg x) \frac{dx}{\text{Cos}^2 x} = \pm \frac{1}{q} \pi^2 \text{ V. T. 314, N. 7.}$$

$$19) \int \text{Sin}(p l \text{Sin} x) \frac{dx}{\text{Cos} x} = \frac{\pi}{4} \frac{1 - e^{p\pi}}{1 + e^{p\pi}} \text{ V. T. 402, N. 9.}$$

$$20) \int \text{Sin}(p l \text{Cos} x) \frac{dx}{Tg x} = \frac{\pi}{2} \frac{1 + e^{p\pi}}{1 - e^{p\pi}} + \frac{1}{2p} \text{ V. T. 402, N. 10.}$$

$$21) \int \text{Sin}(p l \text{Sin} x) \frac{Tg x}{\text{Sin}^2 x} dx = - \sum_{n=1}^{\infty} \frac{p}{(2n - q)^2 + p^2} \text{ V. T. 404, N. 5.}$$

$$22) \int \text{Sin}(p l \text{Cos} x) \frac{\text{Cos}^2 x}{Tg x} dx = - \sum_{n=1}^{\infty} \frac{p}{(2n + q)^2 + p^2} \text{ V. T. 402, N. 11.}$$

$$1) \int l \left(\frac{\text{Cos} 2x}{\text{Cos}^2 x} \right)^2 \frac{Tg^{p-2} x}{\text{Sin} 2x} dx = \frac{\pi}{p-2} \text{Cot} \frac{1}{2} p \pi \text{ V. T. 134, N. 4.}$$

$$2) \int l \left(\frac{\text{Cos} 2x}{\text{Sin}^2 x} \right)^2 \frac{dx}{Tg^{p-2} x \cdot \text{Sin} 2x} = \frac{\pi}{p-2} \text{Cot} \frac{1}{2} p \pi \text{ V. T. 134, N. 13.}$$

$$3) \int l \left(\frac{1 + \text{Sin} x}{1 - \text{Sin} x} \right) \frac{dx}{\text{Sin} x} = \frac{1}{2} \pi^2 \text{ (VIII, 546).}$$

$$4) \int l \left(\frac{1 + p \text{Sin} x}{1 - p \text{Sin} x} \right) \frac{dx}{\text{Sin} x} = \pi \text{Arcsin} p [p^2 \leq 1] \text{ V. T. 315, N. 12.}$$

$$5) \int l \left(\frac{1 + p \text{Sin} ax}{1 - p \text{Sin} ax} \right) \frac{dx}{\text{Sin} ax} = \pi \text{Arcsin} p \text{ V. T. 315, N. 4.}$$

$$6) \int l \left(\frac{1 + \text{Sin} 2x}{1 + \text{Cos} \lambda \cdot \text{Sin} 2x} \right) \frac{Tg^p x}{\text{Sin} 2x} dx = \frac{\pi}{p} \text{Cosec} p \pi \cdot (1 - \text{Cos} p \lambda) [p < 1] \text{ V. T. 134, N. 17.}$$

$$7) \int l \left(\frac{1 + \text{Sin} 2x}{1 + \text{Cos} \lambda \cdot \text{Sin} 2x} \right) \frac{dx}{Tg^p x \cdot \text{Sin} 2x} = \frac{\pi}{p} \text{Cosec} p \pi \cdot (1 - \text{Cos} p \lambda) [p < 1] \text{ V. T. 134, N. 17.}$$

$$8) \int \left\{ l \left(\frac{1 + \text{Sin} x}{1 - \text{Sin} x} \right) - 2 \text{Sin} x \right\} \frac{dx}{\text{Sin}^2 x} = \frac{1}{4} \pi^2 \text{ (IV, 444).}$$

$$9) \int l \left(\frac{1 + p \sqrt{\text{Sin} 2x}}{1 - p \sqrt{\text{Sin} 2x}} \right) \frac{dx}{\text{Sin} x} = 2 \pi \text{Arcsin} p \text{ (VIII, 423).}$$

- 10) $\int \iota \left(\frac{1+p \sqrt{\sin 2x}}{1-p \sqrt{\sin 2x}} \right) \frac{dx}{\cos x} = 2\pi \operatorname{Arcsin} p$ (VIII, 423).
- 11) $\int \iota \left(\frac{2 \cos x}{1+\cos x} \right) \frac{dx}{\sin x} = -\frac{1}{12} \pi^2$ V. T. 114, N. 14.
- 12) $\int \iota \left(\frac{1+p \cos x}{1-p \cos x} \right) \frac{dx}{\cos x} = \pi \operatorname{Arcsin} p$ [$p^2 \leq 1$] (VIII, 582).
- 13) $\int \iota \left(\frac{1+p \cos ax}{1-p \cos ax} \right) \frac{dx}{\cos ax} = \pi \operatorname{Arcsin} p$ [$p^2 \leq 1$] V. T. 315, N. 5.
- 14) $\int \iota \left(\frac{(\sin x + \cos x)^2}{1+\cos \lambda \cdot \sin 2x} \right) \frac{dx}{\sin 2x} = \frac{1}{2} \lambda^2$ [$0 < \lambda < \pi$] V. T. 134, N. 15.
- 15) $\int \iota \left(\frac{1+\operatorname{Tg} x}{1-\operatorname{Tg} x} \right)^2 \frac{dx}{\operatorname{Tg} x} = \frac{1}{2} \pi^2$ (VIII, 286).
- 16) $\int \iota \left(\frac{1+p \operatorname{Tg} x}{1-p \operatorname{Tg} x} \right)^2 \frac{dx}{\operatorname{Tg} x} = \pi \operatorname{Arcsin} p$ [$p^2 \leq 1$] V. T. 315, N. 15.
- 17) $\int \iota \left(\frac{1+p \operatorname{Tg} ax}{1-p \operatorname{Tg} ax} \right)^2 \frac{dx}{\operatorname{Tg} ax} = \pi \operatorname{Arcsin} p$ V. T. 315, N. 16.
- 18) $\int \iota \left(\frac{1+\sin(p \operatorname{Tg} x)}{1-\sin(p \operatorname{Tg} x)} \right) \frac{dx}{\sin 2x} = \frac{1}{4} \pi^2$ V. T. 416, N. 1.
- 19) $\int \iota \left(\frac{1+\operatorname{Tg}(p \operatorname{Tg} x)}{1-\operatorname{Tg}(p \operatorname{Tg} x)} \right)^2 \frac{dx}{\sin 2x} = \frac{1}{4} \pi^2$ V. T. 416, N. 2.

- 1) $\int (\iota \sin x)^2 \cdot \iota \cos x \frac{dx}{\operatorname{Tg} x} = -\frac{1}{720} \pi^4$ V. T. 305, N. 20.
- 2) $\int (\iota \sin x)^4 \cdot \iota \cos x \frac{dx}{\operatorname{Tg} x} = -\frac{1}{2520} \pi^6$ V. T. 305, N. 21.
- 3) $\int (\iota \sin x)^{2a} \cdot \iota \cos x \frac{dx}{\operatorname{Tg} x} = -\frac{\pi^{2a+2}}{4(a+1)(2a+1)} B_{2a+1}$ V. T. 305, N. 23.
- 4) $\int (\iota \operatorname{Tg} x)^{2a} \cdot \iota \operatorname{Tg}^2 \left(\frac{\pi}{4} \pm x \right) \frac{dx}{\sin 2x} = \pm \frac{1-2^{2a+2}}{(a+1)(2a+1)} \pi^{2a+2} B_{2a+1}$ V. T. 312, N. 6.
- 5) $\int (\iota \operatorname{Tg} x)^{2a+1} \cdot \iota \operatorname{Tg}^2 \left(\frac{\pi}{4} \pm x \right) \frac{dx}{\sin 2x} = 0$ V. T. 312, N. 7.

- 6) $\int l T g^2 \left(\frac{\pi}{4} \pm x \right) \frac{p l T g x + 1}{\sin 2x} T g^p x dx = \pm \frac{1}{2} \pi^2 \operatorname{Cosec}^2 \left(\frac{p+1}{2} \pi \right) [p^2 < 1]$ V. T. 312, N. 2.
- 7) $\int l T g^2 \left(\frac{\pi}{4} \pm x \right) \frac{p l T g x - 1}{T g^p x \cdot \sin 2x} dx = \mp \frac{1}{2} \pi^2 \operatorname{Cosec}^2 \left(\frac{p+1}{2} \pi \right) [p^2 < 1]$ V. T. 312, N. 3.
- 8) $\int l T g x \cdot l \left(\frac{1+p \sin 2x}{1-p \sin 2x} \right) \frac{dx}{\sin 2x} = 0 [p^2 \leq 1]$ V. T. 134, N. 25.
- 9) $\int l T g x \cdot l (p^2 \sin^2 x + \cos^2 x) \frac{dx}{\sin^2 x} = \pi (p-1) - p\pi l p$ V. T. 134, N. 24.
- 10) $\int l T g x \cdot l (1+p T g^2 x) \frac{dx}{\sin^2 x} = p\pi (1-l p)$ (VIII, 609).
- 11) $\int l T g x \cdot l (\sin^2 x + p^2 \cos^2 x) \frac{dx}{\cos^2 x} = \pi (1-p) + p\pi l p$ V. T. 134, N. 24.
- 12) $\int l T g x \cdot l (1+p \cot^2 x) \frac{dx}{\cos^2 x} = p\pi (l p - 1)$ (VIII, 609).
- 13) $\int l (1+p^2 T g^2 x) \cdot l (1+q^2 \cot^2 x) \frac{dx}{\sin^2 x} = 2\pi \frac{pq+1}{q} l (1+p q) - 2p\pi$ (VIII, 608).
- 14) $\int l (1+p^2 T g^2 x) \cdot l (1+q^2 \cot^2 x) \frac{dx}{\cos^2 x} = 2\pi \frac{pq+1}{p} l (1+p q) - 2q\pi$ (VIII, 609).
- 15) $\int l (1+p^2 T g^2 x) \cdot l (1+q^2 \cot^2 x) \frac{dx}{\sin^2 2x} = \frac{p+q}{2} \pi \left\{ \frac{pq+1}{pq} l (1+p q) - 1 \right\}$
V. T. 316, N. 13, 14.
- 16) $\int l (1+p^2 T g^2 x) \cdot l (1+q^2 \cot^2 x) \frac{\cos^2 x}{\sin^2 2x} dx = \frac{p-q}{2} \pi \left\{ \frac{pq+1}{pq} l (1+p q) - 1 \right\}$
V. T. 316, N. 13, 14.

- 1) $\int l \sin x \frac{\sin^{p-1} x \cdot \cos x}{1 + \sin^p x} dx = -\frac{1}{12p^2} \pi^2$ V. T. 313, N. 4.
- 2) $\int l \sin x \frac{\sin^{p-1} x \cdot \cos x}{1 - \sin^p x} dx = -\frac{1}{6p^2} \pi^2$ V. T. 313, N. 5.
- 3) $\int l \sin x \frac{\cot x}{\sin^p x - \operatorname{Cosec}^p x} dx = \frac{\pi^2}{4p^2}$ V. T. 317, N. 1, 2.
- 4) $\int l \sin x \frac{dx}{p^2 \sin^2 x + q^2 \cos^2 x} = \frac{\pi}{2pq} l \frac{q}{p+q}$ (VIII, 274).

- 5) $\int l \sin x \frac{1 + \cos^2 \lambda \cdot \sin^2 x}{(\sin^2 \lambda \cdot \sec x + \cos^2 \lambda \cdot \cos x)^2} \frac{dx}{\cos x} = \sec \lambda \cdot l \operatorname{Tg} \frac{1}{2} \lambda$ V. T. 47, N. 12.
- 6) $\int l \sin x \frac{\sin x \cdot \operatorname{Tg} x}{1 + \sin^2 x} dx = -\frac{\pi^2}{16(2 + \sqrt{2})}$ V. T. 112, N. 21.
- 7) $\int l \sin 2x \frac{dx}{p^2 \sin^2 x + q^2 \cos^2 x} = \frac{\pi}{pq} l \frac{\sqrt{2pq}}{p+q}$ (VIII, 274*).
- 8) $\int l \cos x \frac{\cos^{p-1} x \cdot \sin x}{1 + \cos^p x} dx = -\frac{1}{12p^2} \pi^2$ V. T. 309, N. 20.
- 9) $\int l \cos x \frac{\cos^{p-1} x \cdot \sin x}{1 - \cos^p x} dx = -\frac{1}{3p^2} \pi^2$ V. T. 309, N. 21.
- 10) $\int l \cos x \frac{dx}{p^2 \sin^2 x + q^2 \cos^2 x} = \frac{\pi}{2pq} l \frac{p}{p+q}$ (VIII, 274).
- 11) $\int l \cos x \frac{\operatorname{Tg} x}{1 + \sec^p x} dx = -\frac{1}{12} \left(\frac{\pi}{p}\right)^2$ V. T. 309, N. 20.
- 12) $\int l \cos x \frac{\operatorname{Tg} x}{1 - \sec^p x} dx = \frac{1}{6} \left(\frac{\pi}{p}\right)^2$ V. T. 309, N. 21.
- 13) $\int l \cos x \frac{\operatorname{Tg} x}{\cos^p x - \sec^p x} dx = \left(\frac{\pi}{2p}\right)^2$ V. T. 317, N. 11, 12.
- 14) $\int l \operatorname{Tg} x \frac{dx}{p^2 \sin^2 x + q^2 \cos^2 x} = \frac{\pi}{2pq} l \frac{q}{p}$ (VIII, 274).
- 15) $\int l \operatorname{Tg} x \frac{\sin^2 x}{p^2 \sin^2 x + q^2 \cos^2 x} dx = \frac{q\pi}{2p(p^2 - q^2)} l \frac{p}{q}$ V. T. 307, N. 1 et T. 317, N. 14.
- 16) $\int l \operatorname{Tg} x \frac{\cos^2 x}{p^2 \sin^2 x + q^2 \cos^2 x} dx = \frac{p\pi}{2q(p^2 - q^2)} l \frac{q}{p}$ V. T. 307, N. 1 et T. 317, N. 14.
- 17) $\int l \operatorname{Tg} x \frac{\cos 2x}{p^2 \sin^2 x + q^2 \cos^2 x} dx = \frac{\pi}{2q(p-q)} l \frac{q}{p}$ V. T. 317, N. 15, 16.
- 18) $\int (l \operatorname{Tg} x)^2 \frac{dx}{\sin^4 x + \cos^4 x} = \frac{3}{32} \pi^2 \sqrt{2}$ (VIII, 568).
- 19) $\int l \operatorname{Tg}^2 \left(\frac{\pi}{4} \pm x\right) \frac{\sin 2x}{1 + p \cos 2x} dx = \pm \frac{\pi}{p} \operatorname{Arcsin} p [p^2 \leq 1]$ V. T. 331, N. 1.
- 20) $\int l \operatorname{Tg}^2 \left(\frac{\pi}{4} \pm x\right) \frac{\cos 2x}{\sin^2 x + p^2 \cos^2 x} dx = \pm \pi \left(\operatorname{Arccot} p - \frac{1}{p^2} \operatorname{Arctg} p \right)$ (VIII, 600).
- 21) $\int l \operatorname{Tg}^2 \left(\frac{\pi}{4} \pm x\right) \frac{\cos 2x}{p^2 \sin^2 x + \cos^2 x} dx = \mp \pi \left(\operatorname{Arccot} p - \frac{1}{p^2} \operatorname{Arctg} p \right)$ (VIII, 600).

- 22) $\int l Tg^2 \left(\frac{\pi}{4} \pm x \right) \frac{Tg x}{\sin^2 x + p^2 \cos^2 x} dx = \pm 2\pi \operatorname{Arccot} p$ (VIII, 600).
- 23) $\int l Tg^2 \left(\frac{\pi}{4} \pm x \right) \frac{Tg x}{p^2 \sin^2 x + \cos^2 x} dx = \pm \frac{2\pi}{p^2} \operatorname{Arctg} p$ (VIII, 599).
- 24) $\int l Tg^2 \left(\frac{\pi}{4} \pm x \right) \frac{\cot x}{\sin^2 x + p^2 \cos^2 x} dx = \pm \frac{2\pi}{p^2} \operatorname{Arctg} p$ (VIII, 599).
- 25) $\int l Tg^2 \left(\frac{\pi}{4} \pm x \right) \frac{\cot x}{p^2 \sin^2 x + \cos^2 x} dx = \pm 2\pi \operatorname{Arccot} p$ (VIII, 599).
- 26) $\int l Tg^2 \left(\frac{\pi}{4} \pm x \right) \frac{\sin 4x}{(1-p)^2 + 4p \sin^2 2x} dx = 0$ [$p < 1$] V. T. 331, N. 4.
- 27) $\int l l Tg x \frac{dx}{2 + \sin 2x} = \frac{\pi}{2\sqrt{3}} l \left(\frac{\Gamma(\frac{2}{3})}{\Gamma(\frac{1}{3})} \sqrt{2\pi} \right)$ V. T. 148, N. 2.

- 1) $\int l(1 + p^2 Tg^2 x) \frac{dx}{q^2 \sin^2 x + r^2 \cos^2 x} = \frac{\pi}{qr} l \frac{q + pr}{q}$ (VIII, 418).
- 2) $\int l(p^2 + Tg^2 x) \frac{dx}{q^2 \sin^2 x + r^2 \cos^2 x} = \frac{\pi}{qr} l \frac{r + pq}{q}$ (VIII, 605).
- 3) $\int l(1 + p^2 \cot^2 x) \frac{dx}{q^2 \sin^2 x + r^2 \cos^2 x} = \frac{\pi}{qr} l \frac{r + pq}{r}$ (VIII, 418).
- 4) $\int l(p^2 + \cot^2 x) \frac{dx}{q^2 \sin^2 x + r^2 \cos^2 x} = \frac{\pi}{qr} l \frac{q + pr}{q}$ (VIII, 605*).
- 5) $\int l \left(\frac{1 - \cos \mu \cdot \sin x}{1 + \cos \mu \cdot \sin x} \right) \frac{\sin x}{1 - \cos^2 \lambda \cdot \sin^2 x} dx = 2\pi \operatorname{Cosec} 2\lambda \cdot l \left\{ \sin \left\{ \frac{1}{2}(\mu + \lambda) \right\} \cdot \sec \left\{ \frac{1}{2}(\mu - \lambda) \right\} \right\}$
V. T. 122, N. 8*.
- 6) $\int l \left(\frac{1 - q \sin x}{1 + q \sin x} \right) \frac{\sin x}{1 - p \sin^2 x} dx = \frac{\pi}{\sqrt{p(1-p)}} l \frac{q \sqrt{p - \{1 - \sqrt{1-p}\}} \{1 - \sqrt{1-q^2}\}}{q \sqrt{p + \{1 - \sqrt{1-p}\}} \{1 - \sqrt{1-q^2}\}}$
V. T. 122, N. 8.
- 7) $\int l \left(\frac{1 - \operatorname{Coth} p^2 \lambda \cdot \sin^2 x}{1 + \operatorname{Coth} p^2 \lambda \cdot \sin^2 x} \right) \frac{\cos x}{1 - \operatorname{Cosh} p^2 \lambda \cdot \cos^2 x} dx = \frac{2\lambda l \operatorname{Sin} h p \lambda}{\operatorname{Sin} h p \lambda \cdot \operatorname{Cosh} p \lambda}$ V. T. 122, N. 8*.
- 8) $\int l \left(\frac{1 + \cos \mu \cdot \cos x}{1 - \cos \mu \cdot \cos x} \right) \frac{dx}{1 + \cos \lambda \cdot \cos x} = 2\pi \operatorname{Cosec} \lambda \cdot l \left\{ \cos \left(\frac{\pi}{4} - \frac{1}{2}\lambda \right) \cdot \sec \left\{ \frac{1}{2}(\lambda - \mu) \right\} \right\}$ (IV, 418).

$$9) \int l \left(\frac{1 - \cos \lambda \cdot \cos x}{1 + \cos \lambda \cdot \cos x} \right) \frac{\cos x}{1 - \cos^2 \lambda \cdot \cos^2 x} dx = 2\pi \operatorname{Cosec} 2\lambda \cdot l \sin \lambda \quad (\text{IV, 448}).$$

$$10) \int l \left(\frac{1 + p \cos x}{1 - p \cos x} \right) \frac{\cos x}{1 - q \cos^2 x} dx = -\frac{\pi}{\sqrt{q(1-q)}} l p \sqrt{q + \{1 + \sqrt{1-q}\} \{1 - \sqrt{1-p^2}\}} \\ p \sqrt{q - \{1 + \sqrt{1-q}\} \{1 - \sqrt{1-p^2}\}} \quad \text{V. T. 122, N. 8.}$$

$$11) \int l \left(\frac{1 + \operatorname{Cosh} p \lambda \cdot \cos x}{1 - \operatorname{Cosh} p \lambda \cdot \cos x} \right) \frac{\cos x}{1 - \operatorname{Cosh}^2 p \lambda \cdot \cos^2 x} dx = \frac{-\pi l \operatorname{Sin} h p \lambda}{\operatorname{Sin} h p \lambda \cdot \operatorname{Cosh} p \lambda} \quad (\text{IV, 449}).$$

$$12) \int l \left(\frac{1 + \cos \mu \cdot \cos x}{1 - \cos \mu \cdot \cos x} \right) \frac{dx}{1 - \cos^2 \lambda \cdot \cos^2 x} = \pi \operatorname{Cosec} \lambda \cdot l \frac{1 + \sin \lambda}{\sin \lambda + \sin \mu} \quad (\text{IV, 449}).$$

$$13) \int l \left(\frac{1 + \cos \mu \cdot \cos x}{1 - \cos \mu \cdot \cos x} \right) \frac{\cos x}{1 - \cos^2 \lambda \cdot \cos^2 x} dx = 2\pi \operatorname{Cosec} 2\lambda \cdot l \left\{ \cos \left\{ \frac{1}{2} (\lambda - \mu) \right\} \cdot \operatorname{Cosec} \left\{ \frac{1}{2} (\lambda + \mu) \right\} \right\} \\ \text{V. T. 122, N. 8*}$$

$$14) \int l \left(\frac{1 + \operatorname{Cosh} p \mu \cdot \cos x}{1 - \operatorname{Cosh} p \mu \cdot \cos x} \right) \frac{\cos x}{1 - \cos^2 \lambda \cdot \cos^2 x} dx = 2\pi \operatorname{Cosec} 2\lambda \cdot l \left\{ \operatorname{Coth} p \left[\frac{1}{2} \operatorname{Arccosh} p \left(\frac{\operatorname{Cosh} p \mu}{\cos \lambda} \right) \right] \right. \\ \left. \operatorname{Tgh} p \left[\frac{1}{2} \operatorname{Arccosh} p \left(\frac{\operatorname{Tg} \lambda}{\operatorname{Tgh} p \mu} \right) \right] \right\} \quad (\text{IV, 449}).$$

$$1) \int l \sin x \frac{dx}{(\sin x \pm p \cos x)^2} = \frac{1}{p(1+p^2)} \left\{ \pm l p - \frac{1}{2} p \pi \right\} \quad \text{V. T. 47, N. 2.}$$

$$2) \int l \sin x \frac{q^2 \sin^2 x - p^2 \cos^2 x}{(p^2 \cos^2 x + q^2 \sin^2 x)^2} dx = \frac{\pi q}{2p(p+q)} \quad \text{V. T. 47, N. 13.}$$

$$3) \int l \sin x \frac{\sin 2x}{(p \sin^2 x + q \cos^2 x)^2} dx = \frac{1}{2q(p-q)} l \frac{p}{q} \quad \text{V. T. 47, N. 17.}$$

$$4) \int l \left(\frac{1}{2} \sin 2x \right) \frac{dx}{(\sin x \pm p \cos x)^2} = -\frac{\pi}{1+q^2} \pm \frac{1-q^2}{1+q^2} \frac{1}{q} l q \quad \text{V. T. 47, N. 1, 2.}$$

$$5) \int l \left(\frac{1}{2} \sin 2x \right) \frac{\sin 2x}{(p \sin^2 x + q \cos^2 x)^2} dx = \frac{1}{2pq} \frac{p+q}{p-q} l \frac{p}{q} \quad \text{V. T. 319, N. 2, 7.}$$

$$6) \int l \cos x \frac{dx}{(\sin x \pm p \cos x)^2} = \frac{p}{1+p^2} \left\{ \mp l p - \frac{\pi}{2p} \right\} \quad \text{V. T. 47, N. 1.}$$

$$7) \int l \sin x \frac{\sin 2x}{(p \sin^2 x + q \cos^2 x)^2} dx = \frac{1}{2p(p-q)} l \frac{p}{q} \quad \text{V. T. 47, N. 17.}$$

F. Log. en num.;

Circ. Dir. rat. en dén. puiss. de bin.

TABLE 319, suite.

Lim. 0 et $\frac{\pi}{2}$.

$$8) \int l \cos x \frac{p^2 \sin^2 x - q^2 \cos^2 x}{(p^2 \sin^2 x + q^2 \cos^2 x)^2} dx = \frac{-\pi q}{2p(p+q)} \text{ V. T. 47, N. 13.}$$

$$9) \int l \cos x \frac{\cos^p x - \sec^p x}{(\cos^p x + \sec^p x)^2} Tg x dx = \frac{\pi}{4p^2} \text{ V. T. 47, N. 28.}$$

$$10) \int l \cos x \frac{\cos^p x}{(1 - \cos x)^{p+1}} Tg x dx = -\frac{\pi}{p} \operatorname{Cosec} p \pi \text{ V. T. 48, N. 6.}$$

$$11) \int l Tg x \frac{dx}{(p \sin x \pm \cos x)^2} = \mp \frac{1}{p} lp \text{ V. T. 139, N. 1.}$$

$$12) \int l Tg x \frac{dx}{(\sin x \pm p \cos x)^2} = \pm \frac{1}{p} lp \text{ V. T. 47, N. 1, 2.}$$

$$13) \int l Tg x \frac{\sin 2x}{(p \sin^2 x + q \cos^2 x)^2} dx = \frac{1}{2pq} l \frac{q}{p} \text{ V. T. 47, N. 17.}$$

$$14) \int (l Tg x)^2 \frac{dx}{(\sin x - \cos x)^2} = \frac{2}{3} \pi^2 \text{ V. T. 139, N. 4.}$$

$$15) \int l Tg^2 \left(\frac{\pi}{4} \pm x \right) \frac{\sin 2x}{(p \sin^2 x + q \cos^2 x)^2} dx = \pm \frac{2}{p+q} \frac{\pi}{\sqrt{pq}} \text{ V. T. 47, N. 16.}$$

F. Log. en num.;

Circ. Dir. rat. en dén. composé.

TABLE 320.

Lim. 0 et $\frac{\pi}{2}$.

$$1) \int l \sin x \frac{\sin^p x}{1 + \sin^p x} \frac{dx}{Tg x} = -\frac{1}{12p^2} \pi^2 \text{ V. T. 313, N. 4.}$$

$$2) \int l \sin x \frac{\sin^p x}{1 - \sin^p x} \frac{dx}{Tg x} = -\frac{1}{6p^2} \pi^2 \text{ V. T. 313, N. 5.}$$

$$3) \int l \sin x \frac{1}{\sin^p x - \operatorname{Cosec}^p x} \frac{dx}{Tg x} = \left(\frac{\pi}{2p} \right)^2 \text{ V. T. 320, N. 1, 2.}$$

$$4) \int l \sin x \frac{\sin^p x - \operatorname{Cosec}^p x}{(\sin^p x + \operatorname{Cosec}^p x)^2} \frac{dx}{Tg x} = \frac{\pi}{4p^2} \text{ V. T. 49, N. 14.}$$

$$5) \int l \sin x \frac{\sin^p x}{(1 - \sin x)^{p+1}} \frac{dx}{Tg x} = -\frac{\pi}{p} \operatorname{Cosec} p \pi \text{ V. T. 49, N. 27.}$$

$$6) \int l \cos x \frac{\cos x}{1 + \cos^4 x} \frac{dx}{Tg x} = -\frac{\pi^2}{16(2 + \sqrt{2})} \text{ V. T. 112, N. 21.}$$

$$7) \int l Tg x \frac{Tg^p x}{\sin x + \cos x} \frac{dx}{\sin x} = -\pi^2 \cos p \pi \cdot \operatorname{Cosec}^2 p \pi [p < 1] \text{ V. T. 312, N. 2 et T. 320, N. 8.}$$

- 8) $\int l Tg x \frac{Tg^p x}{\sin x - \cos x} \frac{dx}{\sin x} = \pi^2 \operatorname{Cosec}^2 p\pi [p < 1] \text{ V. T. 140, N. 1.}$
- 9) $\int l Tg x \frac{1}{\sin x + \cos x} \frac{dx}{\cos x \cdot Tg^p x} = -\pi^2 \cos p\pi \cdot \operatorname{Cosec}^2 p\pi \text{ V. T. 312, N. 8 et T. 320, N. 10.}$
- 10) $\int l Tg x \frac{1}{\sin x - \cos x} \frac{dx}{\cos x \cdot Tg^p x} = \pi^2 \operatorname{Cosec}^2 p\pi [p < 1] \text{ V. T. 140, N. 2.}$
- 11) $\int l Tg x \frac{Tg^q x - \operatorname{Cot}^q x}{Tg^p x + \operatorname{Cot}^p x} \frac{dx}{\sin 2x} = 0 \text{ V. T. 292, N. 8.}$
- 12) $\int l Tg x \frac{Tg^q x + \operatorname{Cot}^q x}{Tg^p x - \operatorname{Cot}^p x} \frac{dx}{\sin 2x} = 0 \text{ V. T. 292, N. 9.}$
- 13) $\int l Tg x \frac{\cos 2x}{1 + \sin 2x} \frac{dx}{1 + \cos \lambda \cdot \sin 2x} = \frac{\lambda^2}{\cos \lambda - 1} \text{ V. T. 331, N. 2.}$
- 14) $\int l Tg^2 \left(\frac{\pi}{4} \pm x \right) \frac{\sin 2x}{(p^2 Tg^2 x + q^2)^2} \frac{dx}{\cos^4 x} = \pm \frac{\pi}{pq} \frac{2}{p^2 + q^2} \text{ V. T. 49, N. 4.}$
- 15) $\int l Tg^2 \left(\frac{\pi}{4} \pm x \right) \frac{1}{\sin^2 x + p \cos^2 x} \frac{dx}{Tg x} = \pm \frac{2\pi}{p^2} \operatorname{Arctg} p \text{ V. T. 313, N. 14.}$
- 16) $\int l Tg^2 \left(\frac{\pi}{4} \pm x \right) \frac{1}{\sin^2 x + p^2 \cos^2 x} \frac{dx}{\sin 2x} = \pm \pi \left(\operatorname{Arccot} p + \frac{1}{p^2} \operatorname{Arctg} p \right) \text{ (VIII, 600).}$
- 17) $\int l Tg^2 \left(\frac{\pi}{4} \pm x \right) \frac{1}{p^2 \sin^2 x + \cos^2 x} \frac{dx}{\sin 2x} = \pm \pi \left(\operatorname{Arccot} p + \frac{1}{p^2} \operatorname{Arctg} p \right) \text{ (VIII, 600).}$
- 18) $\int l(1 + q^2 Tg^2 x) \frac{1}{p^2 \sin^2 x + r^2 \cos^2 x} \frac{dx}{s^2 \sin^2 x + t^2 \cos^2 x} = \frac{\pi}{p^2 t^2 - s^2 r^2}$
 $\left\{ \frac{p^2 - r^2}{pr} l \left(1 + \frac{qr}{p} \right) + \frac{t^2 - s^2}{st} l \left(1 + \frac{qt}{s} \right) \right\} \text{ V. T. 320, N. 20, 21.}$
- 19) $\int l(1 + q^2 Tg^2 x) \frac{\cos 2x}{p^2 \sin^2 x + r^2 \cos^2 x} \frac{dx}{s^2 \sin^2 x + t^2 \cos^2 x} = \frac{\pi}{p^2 t^2 - s^2 r^2}$
 $\left\{ \frac{p^2 + r^2}{pr} l \left(1 + \frac{qr}{p} \right) - \frac{s^2 + t^2}{st} l \left(1 + \frac{qt}{s} \right) \right\} \text{ V. T. 320, N. 20, 21.}$
- 20) $\int l(1 + q^2 Tg^2 x) \frac{\sin^2 x}{p^2 \sin^2 x + r^2 \cos^2 x} \frac{dx}{s^2 \sin^2 x + t^2 \cos^2 x} = \frac{\pi}{p^2 t^2 - s^2 r^2}$
 $\left\{ \frac{t}{s} l \left(1 + \frac{qt}{s} \right) - \frac{r}{p} l \left(1 + \frac{qr}{p} \right) \right\} \text{ (VIII, 545).}$
- 21) $\int l(1 + q^2 Tg^2 x) \frac{\cos^2 x}{p^2 \sin^2 x + r^2 \cos^2 x} \frac{dx}{s^2 \sin^2 x + t^2 \cos^2 x} = \frac{\pi}{p^2 t^2 - s^2 r^2}$
 $\left\{ \frac{p}{r} l \left(1 + \frac{qr}{p} \right) - \frac{s}{t} l \left(1 + \frac{qt}{s} \right) \right\} \text{ (VIII, 545).}$

$$1) \int l \sin x \frac{dx}{1-2p \cos 2x+p^2} = \frac{\pi}{2(1-p^2)} l \frac{1-p}{2} [p^2 < 1], = \frac{\pi}{2(p^2-1)} l \frac{p-1}{2p} [p^2 > 1]$$

V. T. 321, N. 8.

$$2) \int l \sin x \frac{\cos 2x}{1-p \cos 2x+p^2} dx = \frac{\pi}{2p(1-p^2)} \left\{ \frac{1+p^2}{2} l(1-p) - p^2 l2 \right\} [p^2 < 1], =$$

$$= \frac{\pi}{2p(p^2-1)} \left\{ \frac{1+p^2}{2} l \frac{p-1}{p} - l2 \right\} [p^2 > 1] \text{ V. T. 321, N. 9.}$$

$$3) \int l \sin x \frac{dx}{1-2p \cos 4x+p^2} = \frac{\pi}{4(1-p^2)} l \frac{1-p}{4} [p < 1], = \frac{\pi}{4(p^2-1)} l \frac{p-1}{4p} [p > 1]$$

V. T. 321, N. 1.

$$4) \int l \sin x \frac{\cos 2x}{1-2p \cos 4x+p^2} dx = \frac{\pi}{8(1-p)\sqrt{p}} l \frac{1-\sqrt{p}}{1+\sqrt{p}} [p < 1], = \frac{\pi}{8(p-1)\sqrt{p}} l \frac{\sqrt{p}-1}{\sqrt{p}+1}$$

$$[p > 1] \text{ V. T. 321, N. 1.}$$

$$5) \int l \sin x \frac{\cos^2 2x}{1-2p \cos 4x+p^2} dx = \frac{\pi}{8p(1-p)} \left\{ \frac{1+p}{2} l(1-p) - 2p l2 \right\} [p < 1], =$$

$$= \frac{\pi}{8p(p-1)} \left\{ \frac{1+p}{2} l \frac{p-1}{p} - 2 l2 \right\} [p > 1] \text{ V. T. 321, N. 2.}$$

$$6) \int l \sin x \frac{\cos 4x}{1-2p \cos 4x+p^2} dx = \frac{\pi}{8p(1-p^2)} \left\{ (1+p^2) l(1-p) - 4p^2 l2 \right\} [p < 1], =$$

$$= \frac{\pi}{8p(p^2-1)} \left\{ (1+p^2) l \frac{p-1}{p} - 4 l2 \right\} [p > 1] \text{ V. T. 321, N. 2.}$$

$$7) \int l \sin x \frac{(1+p^2) \cos 2x - 2p}{(1-2p \cos 2x+p^2)^2} dx = \frac{\pi}{4(p-1)} [p^2 < 1], = \frac{\pi}{4(1-p)} [p^2 > 1] \text{ V. T. 50, N. 2.}$$

$$8) \int l \cos x \frac{dx}{1-2p \cos 2x+p^2} = \frac{\pi}{2(1-p^2)} l \frac{1+p}{2} [p^2 < 1], = \frac{\pi}{2(p^2-1)} l \frac{1+p}{2p} [p^2 > 1]$$

(VIII, 678).

$$9) \int l \cos x \frac{\cos 2x}{1-2p \cos 2x+p^2} dx = \frac{\pi}{2p(1-p^2)} \left\{ \frac{1+p^2}{2} l(1+p) - p^2 l2 \right\} [p^2 < 1], =$$

$$= \frac{\pi}{2p(p^2-1)} \left\{ \frac{1+p^2}{2} l \frac{p+1}{p} - l2 \right\} [p^2 > 1] \text{ (VIII, 678).}$$

$$10) \int l \cos x \frac{dx}{1-2 \cos 4x+p^2} = \frac{\pi}{4(1-p^2)} l \frac{1-p}{4} [p < 1], = \frac{\pi}{4(p^2-1)} l \frac{p-1}{4p} [p > 1]$$

V. T. 321, N. 8.

$$11) \int l \cos x \frac{\cos 2x}{1-2p \cos 4x+p^2} dx = \frac{\pi}{8(1-p)\sqrt{p}} l \frac{1+\sqrt{p}}{1-\sqrt{p}} [p < 1], = \frac{\pi}{8(p-1)\sqrt{p}} l \frac{\sqrt{p}+1}{\sqrt{p}-1}$$

[p > 1] V. T. 321, N. 8.

F. Log. en num.;

Circ. Dir. rat. en dén. trin.

TABLE 321, suite.

Lim. 0 et $\frac{\pi}{2}$.

$$12) \int l \cos x \frac{\cos^2 2x}{1-2p \cos 4x+p^2} dx = \frac{\pi}{8p(1-p)} \left\{ \frac{1+p}{2} l(1-p) - 2p l2 \right\} [p < 1], =$$

$$= \frac{\pi}{8p(p-1)} \left\{ \frac{1+p}{2} l \frac{p-1}{p} - 2 l2 \right\} [p > 1] \text{ V. T. 321, N. 9.}$$

$$13) \int l \cos x \frac{\cos 4x}{1-2p \cos 4x+p^2} dx = \frac{\pi}{8p(1-p^2)} \left\{ (1+p^2) l(1-p) - 4p^2 l2 \right\} [p < 1], =$$

$$= \frac{\pi}{8p(p^2-1)} \left\{ (1+p^2) l \frac{p-1}{p} - 4 l2 \right\} [p > 1] \text{ V. T. 321, N. 9.}$$

$$14) \int l \cos x \frac{(1+p^2) \cos 2x - 2p}{(1-2p \cos 2x+p^2)^2} dx = \frac{\pi}{4(1+p)} \text{ V. T. 50, N. 1.}$$

$$15) \int l \operatorname{Tg} x \frac{dx}{1-2p \cos 2x+p^2} = \frac{\pi}{2(1-p^2)} l \frac{1-p}{1+p} [p^2 < 1], = \frac{\pi}{2(p^2-1)} l \frac{p-1}{p+1} [p^2 > 1]$$

V. T. 321, N. 1, 8.

$$16) \int l \operatorname{Tg} x \frac{\cos 2x}{1-2p \cos 2x+p^2} dx = \frac{\pi}{4p} l \frac{1+p^2}{1-p^2} l \frac{1-p}{1+p} [p^2 < 1], = \frac{\pi}{4p} l \frac{p^2+1}{p^2-1} l \frac{p-1}{p+1} [p^2 > 1]$$

V. T. 321, N. 2, 9.

$$17) \int l \operatorname{Tg} x \frac{dx}{1-2p \cos 4x+p^2} = 0 \text{ V. T. 321, N. 3, 10.}$$

$$18) \int l \operatorname{Tg} x \frac{\cos 2x}{1-2p \cos 4x+p^2} dx = \frac{\pi}{4(1-p)\sqrt{p}} l \frac{1-\sqrt{p}}{1+\sqrt{p}} [p < 1], = \frac{\pi}{4(p-1)\sqrt{p}} l \frac{\sqrt{p}-1}{\sqrt{p}+1}$$

[p > 1] V. T. 321, N. 4, 11.

$$19) \int l \operatorname{Tg} x \frac{\cos^2 2x}{1-2p \cos 4x+p^2} dx = 0 \text{ V. T. 321, N. 5, 12.}$$

$$20) \int l \operatorname{Tg} x \frac{\cos 4x}{1-2p \cos 4x+p^2} dx = 0 \text{ V. T. 321, N. 6, 13.}$$

$$21) \int l \operatorname{Tg} x \frac{(1+p^2) \cos 2x - 2p}{(1-2p \cos 2x+p^2)^2} dx = \frac{\pi}{2(p^2-1)} [p^2 < 1], = \frac{\pi}{2(1-p^2)} [p^2 > 1]$$

V. T. 321, N. 7, 14.

F. Log. en num. de Circ. Dir. mon.;

Circ. Dir. irrat.

TABLE 322.

Lim. 0 et $\frac{\pi}{2}$.

$$1) \int l \sin x \frac{\sin x}{\sqrt{1+\sin^2 x}} dx = -\frac{\pi}{8} l2 \text{ V. T. 118, N. 3.}$$

$$2) \int l \sin x \frac{\sin^3 x}{\sqrt{1+\sin^2 x}} dx = \frac{1}{4} (l2 - 1) \text{ V. T. 118, N. 4.}$$

- 3) $\int l \sin x \frac{dx}{\sqrt{1-p^2 \sin^2 x}} = -\frac{1}{2} l p \cdot F'(p) - \frac{\pi}{4} F' \{ \sqrt{1-p^2} \} [p^2 < 1] \text{ (VIII, 354).}$
- 4) $\int l \sin x \frac{(1-\sin x)^{p-\frac{1}{2}}}{\sin^{p-\frac{1}{2}} x \cdot Tg x} dx = -\frac{2\pi}{2p-1} \sec p\pi \text{ V. T. 55, N. 14.}$
- 5) $\int l \sin x \frac{\sin^{p-\frac{1}{2}} x}{(1-\sin x)^{p+\frac{1}{2}}} \frac{dx}{Tg x} = \frac{2\pi}{2p-1} \sec p\pi \text{ V. T. 61, N. 4.}$
- 6) $\int l \cos x \frac{\cos x}{\sqrt{1+\cos^2 x}} dx = -\frac{1}{8} \pi l 2 \text{ V. T. 118, N. 3.}$
- 7) $\int l \cos x \frac{\cos^2 x}{\sqrt{1+\cos^2 x}} dx = \frac{1}{4} (l 2 - 1) \text{ V. T. 118, N. 4.}$
- 8) $\int l \cos x \frac{(1-\cos x)^{p-\frac{1}{2}}}{\cos^{p+\frac{1}{2}} x} \sin x dx = \frac{2\pi}{1-2p} \sec p\pi \text{ V. T. 55, N. 14.}$
- 9) $\int l \cos x \frac{dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{4} F'(p) \cdot l \frac{1-p^2}{p^2} - \frac{\pi}{4} F' \{ \sqrt{1-p^2} \} [p^2 < 1] \text{ (VIII, 354).}$
- 10) $\int l \cos x \frac{\cos^{p-\frac{1}{2}} x}{(1-\cos x)^{p+\frac{1}{2}}} \sin x dx = -\frac{2\pi}{1-2p} \sec p\pi \text{ V. T. 56, N. 11.}$
- 11) $\int l Tg x \frac{dx}{\sqrt{1-p^2 \sin^2 x}} = -\frac{1}{2} l (1-p^2) \cdot F'(p) [p^2 < 1] \text{ (VIII, 264).}$
- 12) $\int l \cot \frac{1}{2} x \frac{\sin x}{\sin^2 \lambda + Tg^2 \mu \cdot \sin^2 x} \frac{\cos x}{\sqrt{\sin^2 \lambda - \sin^2 x}} dx = \frac{\pi}{2} \frac{\cos^2 \mu}{\sin \lambda \cdot \sin \mu} l \frac{\sin \mu + \sqrt{1-\cos^2 \lambda \cdot \cos^2 \mu}}{\sin \mu \cdot (1 + \sin \lambda)} \text{ (IV, 453).}$

F. Log. en num. $l(1-p^2 \sin^2 x)$; $[p^2 < 1]$. TABLE 323. Lim. 0 et $\frac{\pi}{2}$.
Circ. Dir. irrat. en dén. $\sqrt{1-p^2 \sin^2 x}$, $\sqrt{1-p^2 \sin^2 x}$;

- 1) $\int l(1-p^2 \sin^2 x) \frac{dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{2} l(1-p^2) \cdot F'(p) \text{ (VIII, 353).}$
- 2) $\int l(1-p^2 \sin^2 x) \frac{\sin x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{p^2} [\{ 2 - l(1-p^2) \} \sqrt{1-p^2} - 2] \text{ (M, D. 16, 28).}$
- 3) $\int l(1-p^2 \sin^2 x) \frac{\sin^2 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{p^2} \left[\left\{ p^2 - 2 + \frac{1}{2} l(1-p^2) \right\} F'(p) + \left\{ 2 - \frac{1}{2} l(1-p^2) \right\} E'(p) \right] \text{ (VIII, 424).}$
- 4) $\int l(1-p^2 \sin^2 x) \frac{\sin^2 x \cdot \cos^2 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{9p^4} \left[\left\{ (16-16p^2+3p^4) + \frac{3}{2} (1-p^2) l(1-p^2) \right\} F'(p) + \left\{ 2(1-5p^2) - \frac{3}{2} (1-2p^2) l(1-p^2) \right\} E'(p) \right].$

$$5) \int \ell(1-p^2 \sin^2 x) \frac{\sin^4 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{9p^4} \left[\left\{ -2(8+p^2-3p^4) + \frac{3}{2}(2+p^2)\ell(1-p^2) \right\} F'(p) + \left\{ 2(8+5p^2) - 3(1+p^2)\ell(1-p^2) \right\} E'(p) \right].$$

Sur 4) et 5) voyez M, D. 16, 28.

$$6) \int \ell(1-p^2 \sin^2 x) \frac{\cos^2 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{p^2} \left[\left\{ 2-p^2 - \frac{1}{2}(1-p^2)\ell(1-p^2) \right\} F'(p) - \left\{ 2 - \frac{1}{2}\ell(1-p^2) \right\} E'(p) \right] \text{ (VIII, 424).}$$

$$7) \int \ell(1-p^2 \sin^2 x) \frac{\cos^4 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{9p^4} \left[-\left\{ 2(8-17p^2+6p^4) + \frac{3}{2}(1+3p^2)(1-p^2)\ell(1-p^2) \right\} F'(p) + \left\{ -2(1+4p^2) + \frac{3}{2}(1+p^2)\ell(1-p^2) \right\} E'(p) \right] \text{ (M, D. 16, 28).}$$

$$8) \int \ell(1-p^2 \sin^2 x) \frac{\cos 2x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{p^2} \left[\left\{ 4-2p^2 - \frac{1}{2}(2-p^2)\ell(1-p^2) \right\} F'(p) - \left\{ 4 - \ell(1-p^2) \right\} E'(p) \right] \text{ V. T. 323, N. 3, 6.}$$

$$9) \int \ell(1-p^2 \sin^2 x) \frac{dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{1-p^2} \left[(p^2-2)F'(p) + \left\{ 2 + \frac{1}{2}\ell(1-p^2) \right\} E'(p) \right] \text{ (VIII, 569).}$$

$$10) \int \ell(1-p^2 \sin^2 x) \frac{\sin^2 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{-1}{p^2(1-p^2)} \left[\left\{ (2-p^2) + \frac{1}{2}(1-p^2)\ell(1-p^2) \right\} F'(p) - \left\{ 2 + \frac{1}{2}\ell(1-p^2) \right\} E'(p) \right] \text{ (VIII, 569).}$$

$$11) \int \ell(1-p^2 \sin^2 x) \frac{\sin^2 x \cdot \cos^2 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{p^4} \ell(1-p^2) \cdot \left\{ \frac{1}{2}(2-p^2)F'(p) - E'(p) \right\}.$$

$$12) \int \ell(1-p^2 \sin^2 x) \frac{\sin^4 x \cdot \cos^4 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{9p^6} \left[\left\{ (16-16p^2+3p^4) - \frac{3}{2}(8-3p^2)(1-p^2)\ell(1-p^2) \right\} F'(p) + 4(2-p^2) \left\{ -2 + 3\ell(1-p^2) \right\} E'(p) \right].$$

$$13) \int \ell(1-p^2 \sin^2 x) \frac{\sin^4 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{p^4(1-p^2)} \left[-\left\{ p^2(2-p^2) + (1-p^2)\ell(1-p^2) \right\} F'(p) + \left\{ 2p^2 + \frac{1}{2}(2-p^2)\ell(1-p^2) \right\} E'(p) \right].$$

$$14) \int \ell(1-p^2 \sin^2 x) \frac{\sin^4 x \cdot \cos^4 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{9p^6} \left[\left\{ -(16-16p^2+3p^4) + \frac{3}{2}(8-5p^2)\ell(1-p^2) \right\} F'(p) + \left\{ 8(2-p^2) - \frac{3}{2}(8-p^2)\ell(1-p^2) \right\} E'(p) \right].$$

F. Log. en num. $\int (1-p^2 \sin^2 x)$; $[p^2 < 1]$. TABLE 323, suite. Lim. 0 et $\frac{\pi}{2}$.
Circ. Dir. irrat en dén. $\sqrt{1-p^2 \sin^2 x}$, $\sqrt{1-p^2 \sin^2 x}$;

$$15) \int \int (1-p^2 \sin^2 x) \frac{\sin^6 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{9p^6(1-p^2)} \left[\left\{ (16-32p^2+p^4+6p^6) - \frac{3}{2}(8+p^2) \right. \right. \\ \left. \left. (1-p^2) \int (1-p^2) \right\} F(p) + \left\{ -2(8-12p^2-5p^4) + \frac{3}{2}(8-3p^2-2p^4) \int (1-p^2) \right\} E'(p) \right].$$

Sur 11) à 15) voyez M, D. 16, 28.

$$16) \int \int (1-p^2 \sin^2 x) \frac{\cos^2 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{p^2} \left[\left\{ 2-p^2 + \frac{1}{2} \int (1-p^2) \right\} F'(p) - \left\{ 2 + \frac{1}{2} \int (1-p^2) \right\} E'(p) \right] \\ \text{(VIII, 569).}$$

$$17) \int \int (1-p^2 \sin^2 x) \frac{\cos^4 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{p^4} \left[\left\{ p^2(2-p^2) - (1-p^2) \int (1-p^2) \right\} F'(p) + \right. \\ \left. + \left\{ -2p^2 + \frac{1}{2}(2-p^2) \int (1-p^2) \right\} E'(p) \right].$$

$$18) \int \int (1-p^2 \sin^2 x) \frac{\cos^6 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{9p^6} \left[\left\{ -(16-16p^2-15p^4+9p^6) + \frac{3}{2}(8-9p^2) \right. \right. \\ \left. \left. (1-p^2) \int (1-p^2) \right\} F'(p) + \left\{ 2(8-4p^2-9p^4) - \frac{3}{2}(8-3p^2)(1-p^2) \int (1-p^2) \right\} E'(p) \right].$$

Sur 17) et 18) voyez M, D. 16, 28.

$$19) \int \int (1-p^2 \sin^2 x) \frac{\cos 2x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{2p^2(1-p^2)} \left[2 \left\{ (2-p^2)^2 + (1-p^2) \int (1-p^2) \right\} \right. \\ \left. F'(p) - (2-p^2) \left\{ 4 + \int (1-p^2) \right\} E'(p) \right] \text{(VIII, 569).}$$

F. Log. en num. $\int (1-p^2 \sin^2 x)$; $[p^2 < 1]$. TABLE 324. Lim. 0 et $\frac{\pi}{2}$.
Circ. Dir. irrat. en dén. d' autre forme;

$$1) \int \int (1-p^2 \sin^2 x) \frac{dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{9(1-p^2)^2} \left[- \left\{ 2(10-10p^2+3p^4) + \frac{3}{2}(1-p^2) \right. \right. \\ \left. \left. \int (1-p^2) \right\} F'(p) + (2-p^2) \left\{ 10 + 3 \int (1-p^2) \right\} E'(p) \right].$$

$$2) \int \int (1-p^2 \sin^2 x) \frac{\sin^2 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{9p^2(1-p^2)^2} \left[- \left\{ (2+7p^2-3p^4) + \frac{3}{2}(1-p^2) \int (1-p^2) \right\} \right. \\ \left. F'(p) + \left\{ 2(1+4p^2) + \frac{3}{2}(1+p^2) \int (1-p^2) \right\} E'(p) \right].$$

$$3) \int \int (1-p^2 \sin^2 x) \frac{\sin^2 x \cdot \cos^2 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{9p^2(1-p^2)} \left[\left\{ -(16-16p^2+3p^4) + 3(1-p^2) \int (1-p^2) \right\} \right. \\ \left. F'(p) + (2-p^2) \left\{ 8 + \frac{3}{2} \int (1-p^2) \right\} E'(p) \right].$$

- $$4) \int \int (1 - p^2 \sin^2 x) \frac{\sin^2 x \cdot \cos^4 x}{\sqrt{1 - p^2 \sin^2 x}} dx = \frac{1}{9p^3} \left[\left\{ (16 - 16p^2 + 3p^4) + \frac{3}{2} (8 - p^2) \int (1 - p^2) \right\} \right. \\ \left. F'(p) - 4(2 - p^2) \{ 2 - 3 \int (1 - p^2) \} E'(p) \right].$$
- $$5) \int \int (1 - p^2 \sin^2 x) \frac{\sin^2 x \cdot \cos^6 x}{\sqrt{1 - p^2 \sin^2 x}} dx = \frac{1}{9p^3} \left[\{ p^2 (16 - 16p^2 + 3p^4) + 6(4 + 6p^2 - p^4) \int (1 - p^2) \} \right. \\ \left. F'(p) - 4(2 - p^2) \{ 2p^2 - 3(1 + p^2) \int (1 - p^2) \} E'(p) \right].$$
- $$6) \int \int (1 - p^2 \sin^2 x) \frac{\sin^4 x}{\sqrt{1 - p^2 \sin^2 x}} dx = \frac{1}{9p^4(1 - p^2)^2} \left[\left\{ 2(8 - 17p^2 + 6p^4) + \frac{3}{2} (2 - 3p^2)(1 - p^2) \right. \right. \\ \left. \left. \int (1 - p^2) \right\} F'(p) - \{ 2(8 - 13p^2) + 3(1 - 2p^2) \int (1 - p^2) \} E'(p) \right].$$
- $$7) \int \int (1 - p^2 \sin^2 x) \frac{\sin^4 x \cdot \cos^2 x}{\sqrt{1 - p^2 \sin^2 x}} dx = \frac{1}{9p^6(1 - p^2)} \left[- \left\{ (16 - 16p^2 + 3p^4) + \frac{3}{2} (8 - 3p^2) \right. \right. \\ \left. \left. (1 - p^2) \int (1 - p^2) \right\} F'(p) + \left\{ 8(2 - p^2) + \frac{3}{2} (8 - 7p^2) \int (1 - p^2) \right\} E'(p) \right].$$
- $$8) \int \int (1 - p^2 \sin^2 x) \frac{\sin^4 x \cdot \cos^4 x}{\sqrt{1 - p^2 \sin^2 x}} dx = \frac{1}{3p^3} \int (1 - p^2) \left[- \frac{1}{2} (16 + 16p^2 - 3p^4) F'(p) - \right. \\ \left. - 4(2 - p^2) E'(p) \right].$$
- $$9) \int \int (1 - p^2 \sin^2 x) \frac{\sin^6 x}{\sqrt{1 - p^2 \sin^2 x}} dx = \frac{1}{9p^6(1 - p^2)^2} \left[\left\{ (16 - 16p^2 - 15p^4 + 9p^6) + \frac{3}{2} (8 - 9p^2) \right. \right. \\ \left. \left. (1 - p^2) \int (1 - p^2) \right\} F'(p) - \left\{ 2(8 - 4p^2 - 9p^4) + \frac{3}{2} (8 - 13p^2 + 3p^4) \int (1 - p^2) \right\} E'(p) \right].$$
- $$10) \int \int (1 - p^2 \sin^2 x) \frac{\sin^6 x \cdot \cos^2 x}{\sqrt{1 - p^2 \sin^2 x}} dx = \frac{1}{9p^3(1 - p^2)} \left[\{ -p^2(16 - 16p^2 + 3p^4) + 12(2 + p^2) \right. \\ \left. (1 - p^2) \int (1 - p^2) \} F'(p) + \left\{ 8p^2(2 - p^2) + \frac{3}{2} (16 - 16p^2 + p^4) \int (1 - p^2) \right\} E'(p) \right].$$
- $$11) \int \int (1 - p^2 \sin^2 x) \frac{\sin^8 x}{\sqrt{1 - p^2 \sin^2 x}} dx = \frac{1}{9p^3(1 - p^2)^2} \left[\left\{ 2p^2(16 - 24p^2 + 2p^4 + 3p^6) - \right. \right. \\ \left. \left. - \frac{3}{2} (16 - 16p^2 + p^4)(1 - p^2) \int (1 - p^2) \right\} F'(p) - \{ 2p^2(16 - 16p^2 - 5p^4) + \right. \\ \left. + 3(8 - 12p^2 + 2p^4 + p^6) \int (1 - p^2) \} E'(p) \right].$$
- $$12) \int \int (1 - p^2 \sin^2 x) \frac{\cos^2 x}{\sqrt{1 - p^2 \sin^2 x}} dx = \frac{1}{9p^3(1 - p^2)} \left[\left\{ (2 - 11p^2 + 6p^4) + \frac{3}{2} (1 - p^2) \int (1 - p^2) \right\} \right. \\ \left. F'(p) - \left\{ 2(1 - 5p^2) + \frac{3}{2} (1 - 2p^2) \int (1 - p^2) \right\} E'(p) \right].$$

$$13) \int \int (1 - p^2 \sin^2 x) \frac{\cos^4 x}{\sqrt{1 - p^2 \sin^2 x}} dx = \frac{1}{9p^4} \left[\left\{ 2(8 + p^2 - 3p^4) + \frac{8}{2}(2 + p^2) \int (1 - p^2) \right\} \right. \\ \left. F'(p) - \{ 2(8 + 5p^2) + 3(1 + p^2) \int (1 - p^2) \} E'(p) \right].$$

$$14) \int \int (1 - p^2 \sin^2 x) \frac{\cos^6 x}{\sqrt{1 - p^2 \sin^2 x}} dx = \frac{1}{9p^6} \left[- \left\{ (16 - 32p^2 + p^4 + 6p^6) + \frac{3}{2}(8 - 3p^2 - p^4) \right. \right. \\ \left. \int (1 - p^2) \right\} F'(p) + \{ 2(8 - 12p^2 - 5p^4) - 3(8 - 5p^2 - p^4) \int (1 - p^2) \} E'(p) \right].$$

$$15) \int \int (1 - p^2 \sin^2 x) \frac{\cos^8 x}{\sqrt{1 - p^2 \sin^2 x}} dx = \frac{1}{9p^8} \left[- \left\{ 2p^2(16 - 8p^2 + 2p^4 + 3p^6) + \frac{3}{2}(16 - p^4) \right. \right. \\ \left. \left. (1 + p^2) \int (1 - p^2) \right\} F'(p) + \{ 2p^2(16 - 14p^2 - 5p^4) - 3(8 + 4p^2 - 9p^4 - p^6) \int (1 - p^2) \} E'(p) \right].$$

Sur 1) à 15) voyez M, D. 16, 28.

$$16) \int \int (1 - p^2 \sin^2 x) \frac{\cos 2x}{\sqrt{1 - p^2 \sin^2 x}} dx = \frac{1}{9p^2(1 - p^2)^2} \left[\left\{ (4 - 6p^2 + 9p^4 - 6p^6) + \frac{3}{2}(2 - p^2) \right. \right. \\ \left. \left. (1 - p^2) \int (1 - p^2) \right\} F'(p) - \{ 2(2 - 2p^2 + 5p^4) + 3(1 - p^2 + p^4) \} E'(p) \right]$$

V. T. 324, N. 2, 12.

$$17) \int \int (1 - p^2 \sin^2 x) \frac{\sin x \cdot \cos x}{\sqrt{1 - p^2 \sin^2 x}^{2a+1}} dx = \frac{1}{(2a-1)^2 p^2} \left[\left\{ 2 + (2a-1) \int (1 - p^2) \right\} \sqrt{1 - p^2}^{1-2a} - 2 \right]$$

M, D. 16, 28.

$$18) \int \int (1 - p^2 \sin^2 x) \cdot dx \sqrt{1 - p^2 \sin^2 x} = (2 - p^2) F'(p) - \left\{ 2 - \frac{1}{2} \int (1 - p^2) \right\} E'(p) \text{ (VIII, 424).}$$

$$19) \int \int (1 - p^2 \sin^2 x) \cdot \sin x \cdot \cos x dx \sqrt{1 - p^2 \sin^2 x} = \frac{1}{9p^2} \left[\left\{ 2 - 3 \int (1 - p^2) \right\} \sqrt{1 - p^2} - 2 \right].$$

$$20) \int \int (1 - p^2 \sin^2 x) \cdot \sin^2 x dx \sqrt{1 - p^2 \sin^2 x} = \frac{1}{9p^2} \left[\left\{ -(2 - 11p^2 + 6p^4) + \frac{3}{2}(1 - p^2) \int (1 - p^2) \right\} \right. \\ \left. F'(p) + \left\{ 2(1 - 5p^2) - \frac{3}{2}(1 - 2p^2) \int (1 - p^2) \right\} E'(p) \right].$$

$$21) \int \int (1 - p^2 \sin^2 x) \cdot \cos^2 x dx \sqrt{1 - p^2 \sin^2 x} = \frac{1}{9p^2} \left[\left\{ (2 + 7p^2 - 3p^4) - \frac{3}{2}(1 - p^2) \int (1 - p^2) \right\} \right. \\ \left. F'(p) + \{ 2(1 + 4p^2) + 3(2 - p^2) \int (1 - p^2) \} E'(p) \right].$$

$$22) \int \int (1 - p^2 \sin^2 x) \cdot dx \sqrt{1 - p^2 \sin^2 x}^2 = \frac{1}{9} \left[\left\{ 2(10 - 10p^2 + 3p^4) - \frac{3}{2}(1 - p^2) \int (1 - p^2) \right\} \right. \\ \left. F'(p) - (2 - p^2) \{ 10 - 3 \int (1 - p^2) \} E'(p) \right].$$

Sur 19) à 22) voyez M, D. 16, 28.

$$1) \int \lambda \left\{ \frac{1 + \cos x \cdot \sqrt{\sin^2 \lambda - \sin^2 \mu \cdot \sin^2 x}}{1 - \cos x \cdot \sqrt{\sin^2 \lambda - \sin^2 \mu \cdot \sin^2 x}} \right\} dx = \pi \lambda \left[\frac{1}{2} \left\{ \cos^2 \frac{1}{2} \lambda + \sqrt{\cos^2 \frac{1}{2} \lambda + \sin^2 \frac{1}{2} \mu \cdot \cos^2 \frac{1}{2} \mu} \right\} \right] \quad (\text{IV, 454}).$$

$$2) \int \lambda \left\{ \frac{1 - \cosh p \lambda \cdot \cosh p \mu \cdot \cos x \cdot \sqrt{1 - \coth^2 p \lambda \cdot \tanh^2 p \mu \cdot \cos^2 x}}{1 + \cosh p \lambda \cdot \cosh p \mu \cdot \cos x \cdot \sqrt{1 - \coth^2 p \lambda \cdot \tanh^2 p \mu \cdot \cos^2 x}} \right\} dx = \\ = \pi \lambda \left\{ \frac{4 \sinh p \lambda}{(1 + \sinh p \lambda) \{ \sinh p \lambda + \sqrt{1 - \cosh^2 p \lambda \cdot \cosh^2 p \mu} \}} \right\} \quad (\text{IV, 454}).$$

$$3) \int \lambda \{ 1 + \sqrt{1 - p^2 \sin^2 x} \} \frac{dx}{\sqrt{1 - p^2 \sin^2 x}} = \frac{1}{2} \lambda p \cdot F'(p) + \frac{\pi}{4} F' \{ \sqrt{1 - p^2} \} \quad \text{Sylvester, Quart. Journ. 4, 319.}$$

$$4) \int \lambda (1 + p \sin^2 x) \frac{dx}{\sqrt{1 - p^2 \sin^2 x}} = \frac{1}{2} \lambda \left\{ \frac{2(1+p)}{\sqrt{p}} \right\} \cdot F'(p) - \frac{\pi}{8} F' \{ \sqrt{1 - p^2} \} \quad (\text{VIII, 353}).$$

$$5) \int \lambda (1 - p \sin^2 x) \frac{dx}{\sqrt{1 - p^2 \sin^2 x}} = \frac{1}{2} \lambda \left\{ \frac{2(1-p)}{\sqrt{p}} \right\} \cdot F'(p) - \frac{\pi}{8} F' \{ \sqrt{1 - p^2} \} \quad (\text{VIII, 354}).$$

$$6) \int \lambda \{ \cos^2 x + \sin^2 x \cdot \sqrt{1 - p^2} \} \frac{dx}{\sqrt{1 - p^2 \sin^2 x}} = \frac{1}{2} \lambda \left\{ \frac{2 \sqrt{1 - p^2}}{1 + \sqrt{1 - p^2}} \right\} \cdot F'(p) \quad (\text{VIII, 351}).$$

$$7) \int \lambda \{ 1 + \cot^2 \lambda \cdot \sin^2 x \} \frac{dx}{\sqrt{1 - p^2 \sin^2 x}} = \pi F' \{ \sqrt{1 - p^2}, \lambda \} - 2 F'(p) \cdot \tau \{ \sqrt{1 - p^2}, \lambda \} - \\ - 2 F'(p) \cdot \lambda \sin \lambda - \frac{1}{2} \pi F' \{ \sqrt{1 - p^2} \} - F'(p) \cdot \lambda p - \{ E'(p) - F'(p) \} [F' \{ \sqrt{1 - p^2}, \lambda \}]^2 \quad (\text{VIII, 352}).$$

$$8) \int \lambda \{ 1 - \{ 1 - (1 - p^2) \sin^2 \lambda \} \sin^2 x \} \frac{dx}{\sqrt{1 - p^2 \sin^2 x}} = \pi F' \{ \sqrt{1 - p^2}, \lambda \} - 2 F'(p) \cdot \tau \{ \sqrt{1 - p^2}, \lambda \} + \\ + \frac{1}{2} F'(p) \cdot \lambda \frac{1 - p^2}{p^2} - \frac{1}{2} \pi F' \{ \sqrt{1 - p^2} \} - \{ E'(p) - F'(p) \} [F' \{ \sqrt{1 - p^2}, \lambda \}]^2 \quad (\text{VIII, 353}).$$

$$9) \int \lambda \{ 1 - p^2 \sin^2 \lambda \cdot \sin^2 x \} \frac{dx}{\sqrt{1 - p^2 \sin^2 x}} = E'(p) \cdot \{ F(p, \lambda) \}^2 - 2 F'(p) \cdot \tau(p, \lambda) \quad (\text{VIII, 351}).$$

$$10) \int \lambda \{ 1 - p^2 \sin^4 x \} \frac{dx}{\sqrt{1 - p^2 \sin^2 x}} = \frac{1}{2} \lambda \left\{ \frac{4(1 - p^2)}{p^2} \right\} \cdot F'(p) - \frac{1}{4} \pi F' \{ \sqrt{1 - p^2} \} \quad (\text{VIII, 354}).$$

$$11) \int \lambda \left(\frac{1 + q \sqrt{1 - p^2 \sin^2 x}}{1 - q \sqrt{1 - p^2 \sin^2 x}} \right) \frac{dx}{\sqrt{1 - p^2 \sin^2 x}} = \pi F' \{ \sqrt{1 - p^2}, \arcsin q \} \quad (\text{VIII, 344}).$$

$$12) \int \lambda \left(\frac{\cos \frac{1}{2} x + \sqrt{\cos x}}{\cos \frac{1}{2} x - \sqrt{\cos x}} \right) dx = \pi \lambda \frac{\sqrt{2} + 1}{\sqrt{2} - 1} \quad \text{Enneper, Schl. Z. 7, 346.}$$

- 1) $\int \frac{(\sin^q x - \operatorname{Cosec}^q x)^2}{l \sin x} \operatorname{Tg} x dx = l \frac{\sin q \pi}{q \pi}$ V. T. 130, N. 13.
- 2) $\int \frac{1 + \sin x}{l \sin x} \sin(l \sin x) \cdot \sin 2x dx = \frac{1}{2} \pi$ V. T. 405, N. 3.
- 3) $\int \frac{\sin^q x - \sin^p x}{l \sin x} \sin 2x dx = 2 l \frac{q+2}{p+2}$ V. T. 123, N. 3.
- 4) $\int \frac{(\sin^p x - \sin^q x)(\sin^r x - \sin^s x)}{l \sin x} \sin 2x dx = 2 l \frac{(p+r+2)(q+s+2)}{(p+s+2)(q+r+2)}$ V. T. 123, N. 7.
- 5) $\int \frac{(1 - \sin^{1-q} x)^2}{l \sin x} \frac{\sin^q x}{\sin 2x} dx = \frac{1}{2} l \sin \frac{1}{2} q \pi$ V. T. 128, N. 9.
- 6) $\int \frac{\cos(2p l \sin x)}{l \sin x} \frac{dx}{\cos x} = \frac{1}{2} l \frac{1}{e^{p\pi} + e^{-p\pi}}$ V. T. 405, N. 14.
- 7) $\int \frac{1 - \sin^q x}{l \sin x} \frac{1 - \sin^{q+1} x}{\cos x} dx = -q l 2 [q > -1]$ V. T. 128, N. 12.
- 8) $\int \frac{(\sin^q x - \operatorname{Cosec}^q x)^2}{l \sin x} \frac{dx}{\cos x} = l \cos q \pi$ V. T. 130, N. 12.
- 9) $\int \frac{\cos(2p l \sin x)}{l \sin x} \frac{\sin x + \operatorname{Cosec} x}{\cos x} dx = -l(e^{p\pi} - e^{-p\pi})$ V. T. 405, N. 16.
- 10) $\int \frac{\cos^2 x}{l \sin x} \frac{dx}{1 + \sin^2 x} = l \cot \frac{3\pi}{8}$ V. T. 128, N. 3.
- 11) $\int \frac{\sin^q x - \operatorname{Cosec}^q x}{\sin^p x + \operatorname{Cosec}^p x} \frac{dx}{\operatorname{Tg} x \cdot l \sin x} = l \operatorname{Tg} \left(\frac{p+q}{4p} \pi \right)$ V. T. 128, N. 5.
- 12) $\int \frac{\operatorname{Cosec}^q x - \sin^q x}{(l \sin x)^p} \frac{dx}{\cos x} = (-1)^p \Gamma(1-p) \cdot \sum_1^\infty \left\{ \frac{1}{(2n-1-q)^{1-p}} - \frac{1}{(2n-1+q)^{1-p}} \right\}$
V. T. 131, N. 2.
- 13) $\int \frac{\cos^q x - \cos^p x}{l \cos x} \sin 2x dx = 2 l \frac{q+2}{p+2}$ V. T. 123, N. 3.
- 14) $\int \frac{(\cos^p x - \cos^q x)(\cos^r x - \cos^s x)}{l \cos x} \sin 2x dx = 2 l \frac{(p+r+2)(q+s+2)}{(p+s+2)(q+r+2)}$ V. T. 123, N. 7.
- 15) $\int \frac{1 + \cos x}{l \cos x} \sin(l \cos x) \cdot \sin 2x dx = \frac{1}{2} \pi$ V. T. 405, N. 3.
- 16) $\int \frac{(\cos^q x - \sec^q x)^2}{l \cos x} \frac{dx}{\sin x} = l \cos q \pi$ V. T. 130, N. 12.

- 17) $\int \frac{1 - \cos^q x}{l \cos x} \frac{1 - \cos^{q+1} x}{\sin x} dx = -q l^2 [q > -1]$ V. T. 128, N. 12.
- 18) $\int \frac{\cos(2pl \cos x)}{l \cos x} \frac{dx}{\sin x} = -\frac{1}{2} l(e^{p\pi} + e^{-p\pi})$ V. T. 405, N. 14.
- 19) $\int \frac{(1 - \cos^{1-q} x)^2}{l \cos x} \frac{\cos^q x}{\sin 2x} dx = \frac{1}{2} l \sin \frac{1}{2} q \pi$ V. T. 128, N. 9.
- 20) $\int \frac{\cos(2pl \cos x)}{l \cos x} \frac{\cos x + \sec x}{\sin x} dx = -l(e^{p\pi} - e^{-p\pi})$ V. T. 405, N. 16.
- 21) $\int \frac{(\cos^q x - \sec^q x)^2}{l \cos x} \frac{dx}{Tg x} = l \frac{\sin q \pi}{q \pi}$ V. T. 130, N. 13.
- 22) $\int \frac{\cos^q x - \sec^q x}{\cos^p x + \sec^p x} \frac{Tg x}{l \cos x} dx = l Tg \left(\frac{p+q}{4p} \pi \right)$ V. T. 128, N. 5.
- 23) $\int \frac{Tg^{p-1} x - Tg^{q-1} x}{l Tg x} dx = l \left(Tg \frac{1}{4} p \pi \cdot \cot \frac{1}{4} q \pi \right)$ V. T. 143, N. 2.
- 24) $\int \frac{Tg^p x - Tg^q x}{\sin x + \cos x} \frac{dx}{\sin x \cdot l Tg x} = l \left(Tg \frac{1}{2} p \pi \cdot \cot \frac{1}{2} q \pi \right)$ V. T. 143, N. 2.
- 25) $\int \frac{Tg^{p-1} x - Tg^{q-1} x}{l Tg x} \frac{dx}{\cos 2x} = l \left(\sin \frac{1}{2} p \pi \cdot \operatorname{cosec} \frac{1}{2} q \pi \right)$ V. T. 143, N. 4.
- 26) $\int \frac{Tg^{p-1} x - Tg^{q-1} x}{l Tg x} \frac{dx}{Tg^{p+q} x} = l \left(Tg \frac{1}{4} p \pi \cdot \cot \frac{1}{4} q \pi \right)$ V. T. 143, N. 2.
- 27) $\int \frac{Tg^{p-1} x - Tg^{q-1} x}{Tg^{p+q} x \cdot l Tg x} \frac{dx}{\cos 2x} = l \left(\sin \frac{1}{2} q \pi \cdot \operatorname{cosec} \frac{1}{2} p \pi \right)$ V. T. 143, N. 4.
- 28) $\int \frac{Tg^p x - Tg^q x}{\sin x + \cos x} \frac{dx}{Tg^{p+q+1} x \cdot \cos x \cdot l Tg x} = l \left(Tg \frac{1}{2} p \pi \cdot \cot \frac{1}{2} q \pi \right)$ V. T. 143, N. 2.

- 1) $\int \frac{\sin^p x - \operatorname{cosec}^p x}{\pi^2 + (l \sin x)^2} \frac{dx}{\cos x} = \frac{1}{2\pi} \left\{ p \pi \cos p \pi - \sin p \pi \cdot l \{ 2(1 + \cos p \pi) \} \right\} [p \leq 1]$ V. T. 131, N. 4.
- 2) $\int \frac{\sin^{p-1} x - \sin^{1-p} x}{q^2 + (l \sin x)^2} \frac{dx}{\cos x} = \frac{\pi}{q} \sum \frac{\sin n p \pi}{q + n \pi} [p^2 < 1]$ V. T. 131, N. 12.
- 3) $\int \frac{\sin^p x - \operatorname{cosec}^p x}{\pi^2 + (l \sin^2 x)^2} \frac{dx}{\cos x} = -\frac{1}{4} \sin \frac{1}{2} p \pi + \frac{1}{4\pi} \cos \frac{1}{2} p \pi \cdot l \frac{1 + \sin \frac{1}{2} p \pi}{1 - \sin \frac{1}{2} p \pi} [p^2 \leq 1]$

- 4) $\int \frac{l \sin x}{\pi^2 + (l \sin x)^2} \frac{dx}{\cos x} = \frac{1}{2} \left(\frac{1}{2} - l^2 \right)$ V. T. 129, N. 10.
- 5) $\int \frac{l \sin x}{\pi^2 + (l \sin^2 x)^2} \frac{dx}{\cos x} = \frac{1}{16} (2 - \pi)$ V. T. 129, N. 11.
- 6) $\int \frac{Tg x \cdot l \sin x}{q^2 + (l \sin x)^2} dx = \frac{1}{2} \left\{ l \frac{\pi}{q} + \frac{\pi}{2q} + Z' \left(\frac{q}{\pi} \right) \right\}$ V. T. 129, N. 14.
- 7) $\int \frac{Tg x \cdot l \sin x}{\pi^2 + (l \sin x)^2} dx = \frac{1}{4} - \frac{1}{2} A$ V. T. 129, N. 13.
- 8) $\int \frac{Tg x \cdot l \sin x}{q^2 - (l \sin x)^2} dx = \frac{\pi^2}{4q^2} \sum_0^{\infty} (-1)^{n+1} \frac{1}{n+1} B_{2n+1} \left(\frac{\pi}{q} \right)^{2n}$ V. T. 129, N. 15.
- 9) $\int \frac{\sin^p x + \operatorname{Cosec}^p x}{\pi^2 + (l \sin x)^2} \frac{l \sin x}{\cos x} dx = \frac{1}{2} \left\{ 1 - p\pi \sin p\pi - \cos p\pi \cdot l \{ 2(1 + \cos p\pi) \} \right\} [p^2 \leq 1]$
V. T. 131, N. 3.
- 10) $\int \frac{\sin^{p-1} x + \sin^{1-p} x}{q^2 + (l \sin x)^2} \frac{l \sin x}{\cos x} dx = -\frac{\pi}{2q} - \pi \sum_1^{\infty} \frac{\cos np\pi}{q + n\pi} [p^2 < 1]$ V. T. 131, N. 11.
- 11) $\int \frac{\sin^p x + \operatorname{Cosec}^p x}{\pi^2 + (l \sin^2 x)^2} \frac{l \sin x}{\cos x} dx = \frac{1}{4} - \frac{1}{8} \pi \cos \frac{1}{2} p\pi + \frac{1}{8} \sin \frac{1}{2} p\pi \cdot l \frac{1 - \sin \frac{1}{2} p\pi}{1 + \sin \frac{1}{2} p\pi} [p^2 < 1]$
V. T. 131, N. 5.
- 12) $\int \frac{l \cos x}{q^2 + (l \sin x)^2} \frac{dx}{Tg x} = \frac{\pi}{2q} l \Gamma \left(\frac{q + \pi}{\pi} \right) + \frac{\pi}{4q} l^2 q + \frac{1}{2} \left(l \frac{q}{\pi} - 1 \right)$ V. T. 126, N. 11.
- 13) $\int \frac{Tg x \cdot l \sin x}{\{q^2 + (l \sin x)^2\}^2} dx = -\frac{\pi^2}{4q^4} \sum_0^{\infty} B_{2n+1} \left(\frac{\pi}{q} \right)^{2n}$ V. T. 129, N. 16.
- 14) $\int \frac{Tg x \cdot l \sin x}{\{q^2 - (l \sin x)^2\}^2} dx = \frac{\pi^2}{4q^4} \sum_0^{\infty} (-1)^{n+1} B_{2n+1} \left(\frac{\pi}{q} \right)^{2n}$ V. T. 129, N. 17.
- 15) $\int \frac{\pi^2 - (l \sin x)^2}{\{\pi^2 + (l \sin x)^2\}^2} \frac{l \cos x}{Tg x} dx = \frac{1}{4} (1 - 2A)$ V. T. 327, N. 7.
- 16) $\int \frac{q^2 - 3(l \sin x)^2}{\{q^2 + (l \sin x)^2\}^2} \frac{l \cos x}{Tg x} dx = -\frac{\pi^2}{4q^4} \sum_0^{\infty} B_{2n+1} \left(\frac{\pi}{q} \right)^{2n}$ V. T. 327, N. 13.
- 17) $\int \frac{q^2 + (l \sin x)^2}{\{q^2 - (l \sin x)^2\}^2} \frac{l \cos x}{Tg x} dx = \frac{\pi^2}{4q^4} \sum_0^{\infty} \frac{(-1)^{n+1}}{n+1} B_{2n+1} \left(\frac{\pi}{q} \right)^{2n}$ V. T. 327, N. 8.
- 18) $\int \frac{q^2 + 3(l \sin x)^2}{\{q^2 - (l \sin x)^2\}^2} \frac{l \cos x}{Tg x} dx = \frac{\pi^2}{4q^4} \sum_0^{\infty} (-1)^{n+1} B_{2n+1} \left(\frac{\pi}{q} \right)^{2n}$ V. T. 327, N. 14.

- 1) $\int \frac{\cos^p x - \sec^p x}{\pi^2 + (l \cos x)^2} \frac{dx}{\sin x} = \frac{1}{2\pi} \{ p\pi \cos p\pi - \sin p\pi \cdot l \{ 2(1 + \cos p\pi) \} \} [p < 1] \text{ V. T. 131, N. 4.}$
- 2) $\int \frac{\cos^p x - \sec^p x}{\pi^2 + (l \cos^2 x)^2} \frac{dx}{\sin x} = -\frac{1}{4} \sin \frac{1}{2} p\pi + \frac{1}{4\pi} \cos \frac{1}{2} p\pi \cdot l \frac{1 + \sin \frac{1}{2} p\pi}{1 - \sin \frac{1}{2} p\pi} [p^2 \leq 1] \text{ V. T. 131, N. 6.}$
- 3) $\int \frac{\cos^{p-1} x - \cos^{1-p} x}{q^2 + (l \cos x)^2} \frac{dx}{\sin x} = \frac{\pi}{q} \sum_{n=1}^{\infty} \frac{\sin np\pi}{q + n\pi} [p^2 < 1] \text{ V. T. 131, N. 12.}$
- 4) $\int \frac{l \cos x}{\pi^2 + (l \cos x)^2} \frac{dx}{\sin x} = \frac{1}{2} \left(\frac{1}{2} - l2 \right) \text{ V. T. 129, N. 10.}$
- 5) $\int \frac{l \cos x}{\pi^2 + (l \cos^2 x)^2} \frac{dx}{\sin x} = \frac{1}{16} (2 - \pi) \text{ V. T. 129, N. 11.}$
- 6) $\int \frac{l \cos x}{\pi^2 + (l \cos x)^2} \frac{dx}{\operatorname{Tg} x} = \frac{1}{4} (1 - 2\Lambda) \text{ V. T. 129, N. 13.}$
- 7) $\int \frac{l \cos x}{q^2 + (l \cos x)^2} \frac{dx}{\operatorname{Tg} x} = \frac{1}{2} \left\{ l \frac{\pi}{q} + \frac{\pi}{2q} + Z' \left(\frac{q}{\pi} \right) \right\} \text{ V. T. 129, N. 14.}$
- 8) $\int \frac{l \cos x}{q^2 - (l \cos x)^2} \frac{dx}{\operatorname{Tg} x} = \frac{\pi^2}{4q^2} \sum_{n=0}^{\infty} \frac{(-1)^{n+1}}{n+1} B_{2n+1} \left(\frac{\pi}{q} \right)^{2n} \text{ V. T. 129, N. 15.}$
- 9) $\int \frac{\cos^p x + \sec^p x}{\pi^2 + (l \cos x)^2} \frac{l \cos x}{\sin x} dx = \frac{1}{2} \{ 1 - p\pi \sin p\pi - \cos p\pi \cdot l \{ 2(1 + \cos p\pi) \} \} [p^2 \leq 1] \text{ V. T. 131, N. 3.}$
- 10) $\int \frac{\cos^p x + \sec^p x}{\pi^2 + (l \cos^2 x)^2} \frac{l \cos x}{\sin x} dx = \frac{1}{4} - \frac{\pi}{8} \cos \frac{1}{2} p\pi + \frac{1}{8} \sin \frac{1}{2} p\pi \cdot l \frac{1 - \sin \frac{1}{2} p\pi}{1 + \sin \frac{1}{2} p\pi} [p^2 < 1] \text{ V. T. 131, N. 5.}$
- 11) $\int \frac{\cos^{p-1} x + \cos^{1-p} x}{q^2 + (l \cos x)^2} \frac{l \cos x}{\sin x} dx = -\frac{\pi}{2q} - \pi \sum_{n=1}^{\infty} \frac{\cos np\pi}{q + n\pi} [p^2 < 1] \text{ V. T. 131, N. 11.}$
- 12) $\int \frac{l \sin x \cdot \operatorname{Tg} x}{q^2 + (l \cos x)^2} dx = \frac{\pi}{2q} l \Gamma \left(\frac{q + \pi}{\pi} \right) + \frac{\pi}{4q} l 2q + \frac{1}{2} \left(l \frac{q}{\pi} - 1 \right) \text{ V. T. 120, N. 11.}$
- 13) $\int \frac{l \cos x}{\{ q^2 + (l \cos x)^2 \}^2} \frac{dx}{\operatorname{Tg} x} = -\frac{\pi^2}{4q^2} \sum_{n=0}^{\infty} B_{2n+1} \left(\frac{\pi}{q} \right)^{2n} \text{ V. T. 129, N. 16}$
- 14) $\int \frac{\pi^2 - (l \cos x)^2}{\{ \pi^2 + (l \cos x)^2 \}^2} \operatorname{Tg} x \cdot l \sin x \cdot dx = \frac{1}{4} (1 - 2\Lambda) \text{ V. T. 328, N. 6.}$
- 15) $\int \frac{q^2 + (l \cos x)^2}{\{ q^2 - (l \cos x)^2 \}^2} \operatorname{Tg} x \cdot l \sin x \cdot dx = \frac{\pi^2}{4q^2} \sum_{n=0}^{\infty} \frac{(-1)^{n+1}}{n+1} B_{2n+1} \left(\frac{\pi}{q} \right)^{2n} \text{ V. T. 328, N. 8.}$
- 16) $\int \frac{q^2 - 3(l \cos x)^2}{\{ q^2 + (l \cos x)^2 \}^2} \operatorname{Tg} x \cdot l \sin x \cdot dx = -\frac{\pi^2}{4q^2} \sum_{n=0}^{\infty} B_{2n+1} \left(\frac{\pi}{q} \right)^{2n} \text{ V. T. 328, N. 13.}$

F. Log. en dén. d'autre forme bin.; TABLE 328, suite.
Circ. Dir.

Lim. 0 et $\frac{\pi}{2}$.

$$17) \int \frac{l \cos x}{\{q^2 - (l \cos x)^2\}^{\frac{1}{2}}} \frac{dx}{\operatorname{Tg} x} = \frac{\pi^2}{4q^2} \sum_0^{\infty} (-1)^{n+1} B_{2n+1} \left(\frac{\pi}{q}\right)^{2n} \text{ V. T. 129, N. 17.}$$

$$18) \int \frac{q^2 + 3(l \cos x)^2}{\{q^2 - (l \cos x)^2\}^{\frac{1}{2}}} \operatorname{Tg} x \cdot l \sin x \cdot dx = \frac{\pi^2}{4q^2} \sum_0^{\infty} (-1)^{n+1} B_{2n+1} \left(\frac{\pi}{q}\right)^{2n} \text{ V. T. 328, N. 17.}$$

F. Log. sous forme irrat.;
Circ. Dir.

TABLE 329.

Lim. 0 et $\frac{\pi}{2}$.

$$1) \int \sqrt{l \operatorname{Cosec} x} \cdot \cos x \, dx = \frac{1}{2} \sqrt{\pi} \text{ V. T. 32, N. 1.}$$

$$2) \int (l \operatorname{Cosec} x)^{a-\frac{1}{2}} \frac{\sin^p x}{\operatorname{Tg} x} \, dx = \frac{1^{a/2}}{(2p)^a} \sqrt{\frac{\pi}{p}} \text{ V. T. 107, N. 2.}$$

$$3) \int \cos x \frac{dx}{\sqrt{l \operatorname{Cosec} x}} = \sqrt{\pi} \text{ V. T. 32, N. 3.}$$

$$4) \int \frac{\sin^p x}{\operatorname{Tg} x} \frac{dx}{\sqrt{l \operatorname{Cosec} x}} = \sqrt{\frac{\pi}{p}} \text{ V. T. 133, N. 1.}$$

$$5) \int \sqrt{l \sec x} \cdot \sin x \, dx = \frac{1}{2} \sqrt{\pi} \text{ V. T. 32, N. 1.}$$

$$6) \int (l \sec x)^{a-\frac{1}{2}} \cdot \cos^p x \cdot \operatorname{Tg} x \, dx = \frac{1^{a/2}}{(2p)^a} \sqrt{\frac{\pi}{p}} \text{ V. T. 107, N. 2.}$$

$$7) \int \sin x \frac{dx}{\sqrt{l \sec x}} = \sqrt{\pi} \text{ V. T. 32, N. 3.}$$

$$8) \int \cos^{p-1} x \cdot \sin 2x \frac{dx}{\sqrt{l \sec x}} = 2 \sqrt{\frac{\pi}{p}} \text{ V. T. 133, N. 1.}$$

F. Log. de Circ. Dir.;
Circ. Dir. rat. ent.

TABLE 330.

Lim. 0 et π .

$$1) \int l(1 \pm p \cos x)^2 \cdot dx = 2\pi l \frac{1 + \sqrt{1-p^2}}{2} [p^2 \leq 1], = -2\pi l 2p [p^2 \geq 1] \text{ (VIII, 356, 357).}$$

$$2) \int l(p \pm \cos x)^2 \cdot dx = -2\pi l 2 [p^2 \leq 1], = -4\pi l \{ \sqrt{p+1} - \sqrt{p-1} \} [p^2 \geq 1] \text{ (VIII, 356).}$$

$$3) \int l(1 - p^2 \cos^2 x)^2 \cdot dx = 4\pi l \frac{1 + \sqrt{1-p^2}}{2} [p^2 \leq 1], = -4\pi l 2p [p^2 \geq 1] \text{ (VIII, 356, 357).}$$

$$4) \int l(p^2 - \cos^2 x)^2 \cdot dx = -4\pi l 2 [p^2 \leq 1], = -8\pi l \{ \sqrt{p+1} - \sqrt{p-1} \} [p^2 \geq 1] \text{ (VIII, 356).}$$

- 5) $\int l(1 - 2p \cos x + p^2).dx = 0 [p^2 \leq 1], = 2\pi l p [p^2 \geq 1]$ (VIII, 259).
- 6) $\int l \sin x . \sin 2ax dx = 0$ (IV, 400*).
- 7) $\int l \sin x \cos 2ax dx = \frac{-1}{2a}$ (IV, 400*).
- 8) $\int l \sin x . \cos \{2b(x-a)\} dx = -\frac{1}{2b} e^{-2abi}$ (IV, 400*).
- 9) $\int l \sin x . \sin^{2a} 2x . \cos 2x dx = \frac{-\pi}{4a+2} \frac{1^{a/2}}{2^{a/2}}$ (IV, 462).
- 10) $\int l(1 - 2p \cos x + p^2). \sin ax . \sin x dx = \frac{\pi}{2} \left(\frac{p^{a+1}}{a+1} - \frac{p^{a-1}}{a-1} \right)$ (VIII, 583).
- 11) $\int l(1 - 2p \cos x + p^2). \cos ax dx = -\frac{\pi}{a} p^a$ (VIII, 276).
- 12) $\int l(1 - 2p \cos x + p^2). \cos ax . \cos x dx = -\frac{\pi}{2} \left(\frac{p^{a+1}}{a+1} + \frac{p^{a-1}}{a-1} \right)$ (VIII, 583).
- 13) $\int l(1 - 2p \cos 2x + p^2). \sin 2ax . \sin x dx = 0$ V. T. 330, N. 15.
- 14) $\int l(1 - 2p \cos 2x + p^2). \sin \{(2a-1)x\} . \sin x dx = \frac{\pi}{2} \left(\frac{p^a}{a} - \frac{p^{a-1}}{a-1} \right)$ V. T. 332, N. 5.
- 15) $\int l(1 - 2p \cos 2x + p^2). \cos \{(2a-1)x\} dx = 0$ (IV, 462).
- 16) $\int l(1 - 2p \cos 2x + p^2). \cos 2ax . \cos x dx = 0$ V. T. 330, N. 15.
- 17) $\int l(1 - 2p \cos 2x + p^2). \cos \{(2a-1)x\} . \cos x dx = -\frac{\pi}{2} \left(\frac{p^a}{a} + \frac{p^{a-1}}{a-1} \right)$ V. T. 332, N. 5.
- 18) $\int l \left\{ \frac{1 + 2p \cos x + p^2}{1 - 2p \cos x + p^2} \right\} . \sin \{(2a+1)x\} dx = 2\pi p^{2a+1} \frac{(-1)^a}{2a+1}$ (VIII, 277).

- 1) $\int l(1 \pm p \cos x) \frac{dx}{\cos x} = \pm \pi \operatorname{Arcsin} p [p^2 < 1]$ (VIII, 357).
- 2) $\int l \left\{ \frac{1 + \sin x}{1 + \cos \lambda . \sin x} \right\} \frac{dx}{\sin x} = \lambda^2$ V. T. 134, N. 15.

$$3) \int l(1 - 2p \cos x + p^2) \frac{dx}{\cos x} = \infty [p^2 \leq 1] \text{ (VIII, 563).}$$

$$4) \int l(1 - 2p \cos 2x + p^2) \frac{dx}{\sin x} = 0 \text{ V. T. 321, N. 17.}$$

$$5) \int l \left\{ \frac{1 + 2p \cos 2x + p^2}{1 + 2p \cos x + p^2} \right\} \frac{dx}{\operatorname{Tg} x} = 0 \text{ (IV, 463).}$$

$$6) \int l \sin x \frac{dx}{p + q \cos x} = \frac{\pi}{\sqrt{p^2 - q^2}} l \frac{\sqrt{p^2 - q^2}}{p + \sqrt{p^2 - q^2}} [0 < p > q] \text{ (VIII, 274).}$$

$$7) \int l(-r + p \cos x) \frac{\cos x}{1 - q \cos^2 x} dx = \frac{\pi}{\sqrt{q(1-q)}} l \frac{p \sqrt{q} - \{1 - \sqrt{1-q}\} \{r + \sqrt{r^2 - p^2}\}}{p \sqrt{q} + \{1 - \sqrt{1-q}\} \{r + \sqrt{r^2 - p^2}\}} \\ \text{V. T. 145, N. 22.}$$

$$8) \int l \sin x \frac{dx}{1 - 2p \cos x + p^2} = \frac{\pi}{1 - p^2} l \frac{1 - p^2}{2} [p^2 < 1], = \frac{\pi}{p^2 - 1} l \frac{p^2 - 1}{2p^2} [p^2 > 1] \\ \text{V. T. 321, N. 1, 8.}$$

$$9) \int l \sin x \frac{\cos x}{1 - 2p \cos x + p^2} dx = \frac{\pi}{2p} \frac{1 + p^2}{1 - p^2} l(1 - p^2) - \frac{p\pi}{1 - p^2} l2 [p^2 < 1], = \\ = \frac{\pi}{2p} \frac{p^2 + 1}{p^2 - 1} l \frac{p^2 - 1}{p^2} - \frac{p\pi}{p^2 - 1} l2 [p^2 > 1] \text{ V. T. 321, N. 2, 9.}$$

$$10) \int l \sin r x \frac{dx}{1 - 2p \cos x + p^2} = \frac{\pi}{1 - p^2} l \frac{1 - p^{2r}}{2}$$

$$11) \int l \cos r x \frac{dx}{1 - 2p \cos x + p^2} = \frac{\pi}{1 - p^2} l \frac{1 + p^{2r}}{2}$$

$$12) \int l \operatorname{Tg} r x \frac{dx}{1 - 2p \cos x + p^2} = \frac{\pi}{1 - p^2} l \frac{1 - p^{2r}}{1 + p^{2r}}$$

Dans 10) à 12) on a $p^2 < 1$. Voyez Svanberg, N. Act. Ups. 10, 231.

$$13) \int l \sin x \frac{dx}{1 - 2p \cos 2x + p^2} = \frac{\pi}{1 - p^2} l \frac{1 - p}{2} [p < 1], = \frac{\pi}{p^2 - 1} l \frac{p - 1}{2p} [p > 1] \\ \text{V. T. 321, N. 1.}$$

$$14) \int l \sin x \frac{\cos x}{1 - 2p \cos 2x + p^2} dx = 0 [p > 0] \text{ V. T. 346, N. 6.}$$

$$15) \int l \sin x \frac{\cos 2x}{1 - 2p \cos 2x + p^2} dx = \frac{\pi}{2p(1 - p^2)} \{(1 + p^2) l(1 - p) - 2p^2 l2\} [p < 1], = \\ = \frac{\pi}{2p(p^2 - 1)} \{(1 + p^2) l \frac{p - 1}{p} - 2l2\} [p > 1] \text{ V. T. 321, N. 1, 2.}$$

- 16) $\int l \sin x \frac{\cos^2 x}{1-2p \cos 2x+p^2} dx = \frac{\pi}{4p} \frac{1+p}{1-p} l(1-p) - \frac{\pi}{2(1-p)} l^2 [p < 1], =$
 $= \frac{\pi}{4p} \frac{p+1}{p-1} l \frac{p-1}{p} - \frac{\pi}{2(p-1)} l^2 [p > 1] \text{ V. T. 321, N. 2.}$
- 17) $\int l \sin x \frac{\cos 2x-p}{1-2p \cos 2x+p^2} dx = \frac{\pi}{2p} l(1-p) [p < 1], = \frac{\pi}{2p} l \frac{4p}{p-1} [p > 1] \text{ V. T. 346, N. 9.}$
- 18) $\int l \sin rx \frac{dx}{1-2p \cos 2x+p^2} = \frac{\pi}{1-p^2} l \frac{1-p^r}{2} [p < 1] \text{ V. T. 331, N. 10.}$
- 19) $\int l \sin rx \frac{\cos x}{1-2p \cos 2x+p^2} dx = 0 [p < 1] \text{ V. T. 331, N. 10.}$
- 20) $\int l \cos x \frac{\cos 2x-p}{1-2p \cos 2x+p^2} dx = \frac{\pi}{2p} l(1+p) [p < 1] \text{ V. T. 331, N. 17, 23.}$
- 21) $\int l \cos rx \frac{dx}{1-2p \cos 2x+p^2} = \frac{\pi}{1-p^2} l \frac{1+p^r}{2} [p < 1] \text{ V. T. 331, N. 11.}$
- 22) $\int l \cos rx \frac{\cos x}{1-2p \cos 2x+p^2} dx = 0 [p < 1] \text{ V. T. 331, N. 11.}$
- 23) $\int l \operatorname{Tg} x \frac{\cos 2x-p}{1-2p \cos 2x+p^2} dx = \frac{\pi}{2p} l \frac{1-p}{1+p} [p < 1] \text{ V. T. 346, N. 1.}$
- 24) $\int l \operatorname{Tg} rx \frac{dx}{1-2p \cos 2x+p^2} = \frac{\pi}{1-p^2} l \frac{1-p^r}{1+p^r} [p < 1] \text{ V. T. 331, N. 12.}$
- 25) $\int l \operatorname{Tg} rx \frac{\cos x}{1-2p \cos 2x+p^2} dx = 0 [p < 1] \text{ V. T. 331, N. 12.}$
- 26) $\int l(1-2p \cos x+p^2) \frac{dx}{1-2q \cos x+q^2} = \frac{2\pi}{1-q^2} l(1-pq) [p^2 \leq 1, q^2 < 1] \text{ (VIII, 560).}$

- 1) $\int l(1-2p \cos x+p^2) . dx = 0 [p^2 < 1] \text{ V. T. 330, N. 5.}$
- 2) $\int l(1+p \sin x+q \cos x) . dx = 2\pi l \frac{1+\sqrt{1-p^2-q^2}}{2} [p^2+q^2 < 1] \text{ (VIII, 429).}$
- 3) $\int l(1+p^2+q^2+2p \sin x+2q \cos x) . dx = 0 [p^2+q^2 \leq 1], = 2\pi l(p^2+q^2) [p^2+q^2 \geq 1] \text{ (VIII, 429).}$

$$4) \int l(1-2p \cos x + p^2) \cdot \sin ax \cdot \sin x dx = \pi \left(\frac{p^{a+1}}{a+1} - \frac{p^{a-1}}{a-1} \right) [p^2 < 1] \text{ V. T. 332, N. 5.}$$

$$5) \int l(1-2p \cos x + p^2) \cdot \cos ax dx = -\frac{2\pi}{a} p^a [p^2 < 1] \text{ V. T. 330, N. 11.}$$

$$6) \int l(1-2p \cos x + p^2) \cdot \cos ax \cdot \cos x dx = -\pi \left(\frac{p^{a+1}}{a+1} + \frac{p^{a-1}}{a-1} \right) [p^2 < 1] \text{ V. T. 332, N. 5.}$$

$$7) \int l(1-2p \cos bx + p^2) \cdot \cos ax dx = 0 \left[\frac{b}{a} \text{ fractionn.} \right] \text{ (IV, 465).}$$

$$8) \int l \left\{ \frac{1 + \cos x}{1 + \cos bx} \right\} \cdot \cos ax dx = 2\pi \left(\frac{(-1)^{a-1}}{a} + (-1)^{\frac{a}{b}} \frac{b}{a} \right) \text{ (IV, 465).}$$

$$9) \int l \left\{ \frac{1-2p \cos x + p^2}{1-2p \cos bx + p^2} \right\} \cdot \cos ax dx = 2\pi \left(\frac{b}{a} p^{\frac{a}{b}} - \frac{1}{a} p^a \right) [p^2 \leq 1], = 2\pi \left(\frac{b}{a} p^{-\frac{a}{b}} - \frac{1}{a p^a} \right) [p^2 \geq 1] \text{ (IV, 465).}$$

$$10) \int l \sin x \frac{\cos x - p}{1-2p \cos x + p^2} dx = \frac{\pi}{p} l(1-p^2) [p^2 < 1], = \frac{\pi}{p} l \frac{4p^2}{p^2-1} [p^2 > 1] \text{ V. T. 346, N. 3.}$$

$$1) \int_0^{2a\pi} l((\pm \sin x)) \cdot dx = -2a\pi l2 + (4a+1)a\pi^2 i \text{ (VIII, 281).}$$

$$2) \int_0^{(2a+1)\pi} l((+ \sin x)) \cdot dx = -(2a+1)\pi l2 + \{(2a+1)2a+a\}\pi^2 i \text{ (VIII, 281).}$$

$$3) \int_0^{(2a+1)\pi} l((- \sin x)) \cdot dx = -(2a+1)\pi l2 + \{(2a+1)2a+a+1\}\pi^2 i \text{ (VIII, 281).}$$

$$4) \int_0^{(2a+\frac{1}{2})\pi} l((+ \sin x)) \cdot dx = -\left(2a+\frac{1}{2}\right)\pi l2 - (4a+1)a\pi^2 i \text{ (VIII, 284).}$$

$$5) \int_0^{(2a+\frac{1}{2})\pi} l((- \sin x)) \cdot dx = -\left(2a+\frac{1}{2}\right)\pi l2 - \left\{(4a+1)a-\frac{1}{2}\right\}\pi^2 i \text{ (VIII, 284).}$$

$$6) \int_0^{(2a-\frac{1}{2})\pi} l((+ \sin x)) \cdot dx = -\left(2a-\frac{1}{2}\right)\pi l2 - \left\{(4a-1)a-\frac{1}{2}\right\}\pi^2 i \text{ (VIII, 284).}$$

$$7) \int_0^{(2a-\frac{1}{2})\pi} l((- \sin x)) \cdot dx = -\left(2a-\frac{1}{2}\right)\pi l2 - (4a-1)a\pi^2 i \text{ (VIII, 284).}$$

- 8) $\int_0^{2a\pi} l((\pm \cos x)) \cdot dx = -2a\pi l 2 - 4a\alpha\pi^2 i$ (VIII, 283).
- 9) $\int_0^{(2a+1)\pi} l((+\cos x)) \cdot dx = -(2a+1)\pi l 2 - \frac{1}{2} \{(2a+1)(4\alpha-1) + 2a\} \pi^2 i$ (VIII, 283).
- 10) $\int_0^{(2a+1)\pi} l((- \cos x)) \cdot dx = -(2a+1)\pi l 2 - \frac{1}{2} \{(2a+1)(4\alpha-1) + 2a+2\} \pi^2 i$
(VIII, 283).
- 11) $\int_0^{(2a \pm \frac{1}{2})\pi} l((+\cos x)) \cdot dx = -\left(2a \pm \frac{1}{2}\right) \pi l 2 + \{(4\alpha \pm 1)\alpha + a\} \pi^2 i$ (VIII, 284).
- 12) $\int_0^{(2a \pm \frac{1}{2})\pi} l((- \cos x)) \cdot dx = -\left(2a \pm \frac{1}{2}\right) \pi l 2 + \left\{(4\alpha \pm 1)\alpha + a \pm \frac{1}{2}\right\} \pi^2 i$ (VIII, 284).
- 13) $\int_0^{a\pi} l(1 - 2p \cos x + p^2) \cdot dx = 0 [p^2 < 1], = 2a\pi l p [p^2 > 1]$ (VIII, 259*).
- 14) $\int_0^{\frac{1}{2}a\pi} l Tg^2 \left(\frac{\pi}{4} \pm x\right) \frac{\sin 2x}{1 - q^2 \cos^2 2x} dx = \pm \frac{a\pi}{2q} \operatorname{Arcsin} q [q < 1]$ V. T. 333, N. 15.
- 15) $\int_0^{\frac{1}{2}a\pi} l \left\{ \frac{1 + q \cos x}{1 - q \cos x} \right\} \frac{dx}{\cos x} = a\pi \operatorname{Arcsin} q [q < 1]$ (IV, 469).

- 1) $\int l \left\{ \cos x + \sqrt{\cos^2 x - \operatorname{Sinhp}^2 \left(\frac{1}{2}\pi - \lambda\right)} \right\} \cdot dx = -\lambda l \operatorname{Sinhp} \left(\frac{1}{2}\pi - \lambda\right)$ (IV, 469*).
- 2) $\int l \left\{ \cos x + \sqrt{\cos^2 x - \cos^2 \lambda} \right\} \cdot dx = \left(\lambda - \frac{1}{2}\pi\right) l \cos \lambda$ (IV, 469).
- 3) $\int l \left\{ \frac{\sin \lambda + \sin \mu \cdot \cos x \cdot \sqrt{\sin^2 \lambda - \sin^2 x}}{\sin \lambda - \sin \mu \cdot \cos x \cdot \sqrt{\sin^2 \lambda - \sin^2 x}} \right\} \cdot dx = \pi l \left\{ Tg \frac{1}{2} \mu \cdot \sin \lambda + \sqrt{Tg^2 \frac{1}{2} \mu \cdot \sin^2 \lambda + 1} \right\}$
(IV, 470).
- 4) $\int l \left\{ \frac{1 + \sin x}{1 - \sin x} \right\} \frac{\cot x}{\sqrt{\sin^2 \lambda - \sin^2 x}} dx = \pi \lambda \operatorname{Cosec} \lambda$ (IV, 470).
- 5) $\int \left\{ l \left(\frac{1 + \sin x}{1 - \sin x} \right) - 2 \sin x \right\} \frac{\cos x}{\sin^2 x \cdot \sqrt{\sin^2 \lambda - \sin^2 x}} dx = 2 \operatorname{Cosec} \lambda \cdot (1 - \lambda \cot \lambda)$ (IV, 470).
- 6) $\int l \left\{ \frac{1 + \sin x}{1 - \sin x} \right\} \frac{\sin x \cdot \cos x}{\sqrt{\sin^2 \lambda - \sin^2 x}} dx = \pi (1 - \cos \lambda)$ (IV, 470).

- $$7) \int \lambda \left\{ \frac{1 + \sin x}{1 - \sin x} \right\} \frac{Tg x}{\sqrt{\sin^2 \lambda - \sin^2 x}} dx = \pi \sec \lambda \cdot \lambda \sec \lambda \quad (\text{IV, 470}).$$
- $$8) \int \lambda \left\{ \frac{1 + \sin x}{1 - \sin x} \right\} \frac{Tg^3 x}{\sqrt{\sin^2 \lambda - \sin^2 x}} dx = \frac{\pi}{4} \sin^2 \lambda \cdot \sec^3 \lambda - \frac{\pi}{2} \sec^3 \lambda \cdot \lambda \cos \lambda \quad (\text{IV, 470}).$$
- $$9) \int \left\{ \lambda \left(\frac{1 + \sin x}{1 - \sin x} \right) - 2 \sin x \right\} \frac{\cos x}{\sin^2 x \cdot \sqrt{\sin^2 \lambda - \sin^2 x}} dx = \frac{\pi}{2} \operatorname{Cosec}^3 \lambda \cdot (\lambda - \sin \lambda \cdot \cos \lambda) \quad (\text{IV, 470}).$$

- $$1) \int \lambda \left(\cot \frac{1}{2} x \right) \frac{\sin x \cdot \cos x}{1 - \cos^2 \lambda \cdot \cos^2 x} \frac{dx}{\sqrt{\sin^2 x - \sin^2 \mu}} = \frac{\pi}{\sin 2\lambda} \sin \left(\operatorname{Arctg} \frac{Tg \lambda}{\sin \mu} \right) \cdot \lambda \left\{ Tg \frac{1}{2} \lambda \cdot \cot \left(\frac{1}{2} \operatorname{Arctg} \frac{Tg \lambda}{\sin \mu} \right) \right\} \quad (\text{IV, 470}).$$
- $$2) \int \lambda \left(\cot \frac{1}{2} x \right) \frac{\sin x \cdot \cos x}{\sin^2 x - \sin^2 \mu} \frac{dx}{\sqrt{\sin^2 x - \sin^2 \lambda}} = \frac{\pi}{2} \operatorname{Cosec} \lambda \cdot \sec \phi \cdot \lambda \left(\cot \frac{1}{2} \phi \cdot Tg \frac{1}{2} \mu \right) \left[\sin \phi = \frac{\sin \mu}{\sin \lambda} \right] \quad (\text{IV, 470}).$$
- $$3) \int \lambda \left(\cot \frac{1}{2} x \right) \frac{\sin x \cdot \cos x}{\sin^2 \lambda + Tg^2 \mu \cdot \sin^2 x} \frac{dx}{\sqrt{\sin^2 x - \sin^2 \lambda}} = \frac{\pi \cos^2 \mu}{2 \sin \lambda \cdot \sin \mu} \lambda \frac{\sin \mu + \sqrt{1 - \cos^2 \lambda \cdot \cos^2 \mu}}{\sin \mu \cdot (1 + \sin \lambda)} \quad (\text{IV, 470}).$$
- $$4) \int \lambda \left\{ \frac{1 + \sin x}{1 - \sin x} \right\} \frac{dx}{\sqrt{\sin^2 x - \sin^2 \lambda}} = \pi F'(\sin \lambda) \quad (\text{IV, 470}).$$
- $$5) \int \lambda \left\{ \frac{1 + \sin x}{1 - \sin x} \right\} \cdot \sqrt{\sin^2 x - \sin^2 \lambda} \frac{dx}{\sin^2 x} = -\pi \sin \lambda + \pi E'(\sin \lambda) \quad (\text{IV, 471}).$$
- $$6) \int \lambda \left\{ \frac{1 + \sin x}{1 - \sin x} \right\} \frac{\cos^2 x}{\sqrt{\sin^2 x - \sin^2 \lambda}} dx = -\pi + \pi E'(\sin \lambda) \quad (\text{IV, 471}).$$
- $$7) \int \lambda \left\{ \frac{1 + \sin x}{1 - \sin x} \right\} \frac{\sin^4 x - \sin^4 \lambda}{\sqrt{\sin^2 x - \sin^2 \lambda}} \frac{dx}{\sin^2 x} = \pi (1 - \sin \lambda) \quad (\text{IV, 471}).$$
- $$8) \int \lambda \left\{ \frac{1 + \sin x}{1 - \sin x} \right\} \cdot \sqrt{\sin^2 x - \sin^2 \lambda} dx = \pi + \pi \cos^2 \lambda \cdot F'(\sin \lambda) - \pi E'(\sin \lambda) \quad (\text{IV, 471}^*).$$
- $$9) \int \lambda \left(\cot \frac{1}{2} x \right) \frac{\sin x \cdot \cos x}{\sin^2 \lambda \cdot \cos^2 \mu + \sin^2 \mu \cdot \sin^2 x} \frac{dx}{\sqrt{\sin^2 x - \sin^2 \lambda}} = \frac{1}{\sin \lambda \cdot \sin \mu} \left\{ \lambda \sin \lambda + \frac{\pi}{2} \lambda \frac{\sin \mu + \sqrt{1 - \cos^2 \lambda \cdot \cos^2 \mu}}{1 + \sin \mu} \right\} \quad (\text{IV, 471}).$$

$$10) \int \lambda \left\{ \frac{\sin x + \sqrt{\sin^2 x - \sin^2 \lambda}}{\sin x - \sqrt{\sin^2 x - \sin^2 \lambda}} \right\} \frac{dx}{1 - \cos^2 \mu \cdot \cos^2 x} = \pi \operatorname{Cosec} \mu \cdot \lambda \frac{\sin \mu + \sqrt{1 - \cos^2 \lambda \cdot \cos^2 \mu}}{(1 + \sin \mu) \sin \lambda} \quad (\text{IV, 471*}).$$

$$11) \int \lambda \left\{ \sin x + \sqrt{\sin^2 x - \sin^2 \lambda} \right\} \frac{dx}{1 - \cos^2 \mu \cdot \cos^2 x} = \operatorname{Cosec} \mu \cdot \left\{ -\operatorname{Arctg} \left(\frac{\operatorname{Tg} \lambda}{\sin \mu} \right) \cdot \lambda \sin \lambda - \frac{\pi}{2} \right. \\ \left. \lambda \frac{1 + \sin \mu}{\sin \mu + \sqrt{1 - \cos^2 \lambda \cdot \cos^2 \mu}} \right\} \quad (\text{IV, 471}).$$

$$1) \int \lambda \left\{ \frac{1 + \sin x}{1 - \sin x} \right\} \frac{\cos x}{\sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} dx = \pi \operatorname{Cosec} \mu \cdot F(c, \mu) \quad \text{V. T. 366, N. 10.}$$

$$2) \int \lambda \left\{ \frac{1 + \sin x}{1 - \sin x} \right\} \frac{\cos x}{\sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} \frac{dx}{\sin^2 x} = \frac{\pi}{\sin \lambda \cdot \sin \mu} + \frac{\pi}{\sin^2 \lambda \cdot \sin \mu} \\ F(c, \mu) - \frac{\pi}{\sin^2 \lambda \cdot \sin \mu} E(c, \mu) \quad (\text{IV, 472}).$$

$$3) \int \lambda \left\{ \frac{1 + \sin x}{1 - \sin x} \right\} \frac{\cos x}{\sin^2 x} \sqrt{\frac{\sin^2 \mu - \sin^2 x}{\sin^2 x - \sin^2 \lambda}} dx = \pi \sin \mu \cdot \operatorname{Cosec} \lambda + \pi \frac{\sin^2 \mu - \sin^2 \lambda}{\sin^2 \lambda \cdot \sin^2 \mu} F(c, \mu) - \\ - \frac{\pi}{\sin^2 \lambda} \sin \mu E(c, \mu) \quad (\text{IV, 472}).$$

$$4) \int \lambda \left\{ \frac{1 + \sin x}{1 - \sin x} \right\} \frac{\cos x}{\sin^2 x} \sqrt{\frac{\sin^2 x - \sin^2 \lambda}{\sin^2 \mu - \sin^2 x}} dx = -\pi \sin \lambda \cdot \operatorname{Cosec} \mu + \pi \operatorname{Cosec} \mu \cdot E(c, \mu) \quad (\text{IV, 472}).$$

$$5) \int \lambda \left\{ \frac{1 + \sin x}{1 - \sin x} \right\} \frac{\cos x \cdot \sin^2 x}{\sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} dx = \pi (1 - \cos \lambda \cdot \cos \mu) + \pi \sin \mu \cdot F(c, \mu) - \\ - \pi \sin \mu \cdot E(c, \mu) \quad (\text{IV, 472}).$$

$$6) \int \lambda \left\{ \frac{1 + \sin x}{1 - \sin x} \right\} \cdot \cos x \cdot \sqrt{\frac{\sin^2 \mu - \sin^2 x}{\sin^2 x - \sin^2 \lambda}} dx = \pi (\cos \lambda \cdot \cos \mu - 1) + \pi \sin \mu \cdot E(c, \mu) \quad (\text{IV, 472}).$$

$$7) \int \lambda \left\{ \frac{1 + \sin x}{1 - \sin x} \right\} \cdot \cos x \cdot \sqrt{\frac{\sin^2 x - \sin^2 \lambda}{\sin^2 \mu - \sin^2 x}} dx = \pi (1 - \cos \lambda \cdot \cos \mu) + \frac{\sin^2 \mu - \sin^2 \lambda}{\sin \mu} \pi F(c, \mu) - \\ - \pi \sin \mu \cdot E(c, \mu) \quad (\text{IV, 473}).$$

$$8) \int \lambda \left\{ \frac{1 + \sin x}{1 - \sin x} \right\} \frac{dx}{\cos x \cdot \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \pi \operatorname{Cosec} \mu \cdot \Pi(-\sin^2 \lambda, c, \mu) + \\ + \frac{1}{2} \pi \sec \lambda \cdot \sec \mu \cdot \lambda \{1 + \operatorname{Tg}^2 \lambda + \operatorname{Tg}^2 \mu\} \quad (\text{IV, 473}).$$

F. Logarithmique;

Circ. Dir. [$c = \sin \lambda \cdot \operatorname{Cosec} \mu$].

TABLE 336, suite.

Lim. λ et μ .

$$9) \int \lambda \left\{ \frac{1 + \sin x}{1 - \sin x} \right\} \frac{dx}{\cos^2 x \cdot \sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{\pi \sin^2 \lambda \cdot \cos^2 \mu + \sin^2 \mu \cdot \cos^2 \lambda}{4 \cos^2 \lambda \cdot \cos^2 \mu} \\ - \frac{1}{2} \pi \operatorname{Cosec} \mu \cdot \sec^2 \lambda \cdot F(c, \mu) - \frac{\pi \sin \mu}{2 \cos^2 \lambda \cdot \cos^2 \mu} E(c, \mu) + \frac{\cos^2 \lambda + \cos^2 \mu + \cos^2 \lambda \cdot \cos^2 \mu}{\cos^2 \lambda \cdot \cos^2 \mu} \\ \left\{ \frac{\pi}{2} \operatorname{Cosec} \mu \cdot \Pi(-\sin^2 \lambda, c, \mu) + \frac{\pi}{4} \sec \lambda \cdot \sec \mu \cdot \lambda(1 + \operatorname{Tg}^2 \lambda + \operatorname{Tg}^2 \mu) \right\} \text{ (IV, 473).}$$

$$10) \int \left\{ \frac{1 + q \sin x}{1 - q \sin x} \right\} \frac{\cos x}{\sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} dx = \pi \operatorname{Cosec} \mu \cdot F\left\{ \frac{\sin \lambda}{\sin \mu}, \operatorname{Arcsin}(q \sin \mu) \right\} \\ [q < 1] \text{ (VIII, 311).}$$

F. Logarithmique;

Circulaire Directe.

TABLE 337.

Limites diverses.

$$1) \int_0^\infty \lambda(1 + 2p \cos x + p^2) dx = 0 [p < 1], = \infty [p \geq 1] \text{ (IV, 402).}$$

$$2) \int_0^\infty \lambda(1 + 2p \sin x + p^2) dx = \sum_{n=0}^{\infty} \frac{1}{2n+1} \frac{2^{n/2}}{3^{n/2}} \left(\frac{2p}{1+p^2} \right)^{2n+1} [p \leq 1] \text{ (IV, 402).}$$

$$3) \int_0^\infty \lambda \left(1 + \frac{p^2}{x^2} \right) \cdot \operatorname{Cosec} x dx = \frac{\pi}{r} (1 - e^{-pr}) \text{ (IV, 402).}$$

$$4) \int_0^\infty \lambda \left(\frac{x^2}{p^2 + x^2} \right) \cdot \operatorname{Cosec} x dx = \frac{\pi}{r} (e^{-pr} - 1) \text{ V. T. 337, N. 3.}$$

$$5) \int_0^\infty \lambda \left(\frac{p^2 + x^2}{q^2 + x^2} \right) \cdot \operatorname{Cosec} x dx = \frac{\pi}{r} (e^{-qr} - e^{-pr}) \text{ V. T. 337, N. 3.}$$

$$6) \int_{-\frac{1}{2}\pi}^{\frac{1}{2}\pi} \lambda \cos x \cdot \cos^2 x \cdot \operatorname{Cosec} p x dx = -\frac{\pi}{2p} \ln 2 \text{ V. T. 485, N. 18.}$$

$$7) \int_{-\frac{1}{2}\pi}^{\frac{1}{2}\pi} \lambda(p \sin x - r) \frac{\sin x}{1 - q \sin^2 x} dx = \frac{\pi}{\sqrt{q(1-q)}} \left\{ \frac{p \sqrt{q - \{1 - \sqrt{1-q}\}} \{r + \sqrt{r^2 - p^2}\}}{p \sqrt{q + \{1 - \sqrt{1-q}\}} \{r + \sqrt{r^2 - p^2}\}} \right\} \\ \text{V. T. 145, N. 22.}$$

$$8) \int_0^{\operatorname{Arccos}(\operatorname{Tgh} \lambda \cdot \operatorname{Coth} \mu)} \lambda \left\{ \frac{1 - \operatorname{Cosech} \lambda \cdot \operatorname{Cosech} \mu \cdot \cos x \cdot \sqrt{1 - \operatorname{Cosech}^2 \lambda \cdot \operatorname{Tangh}^2 \mu \cdot \cos^2 x}}{1 + \operatorname{Cosech} \lambda \cdot \operatorname{Cosech} \mu \cdot \cos x \cdot \sqrt{1 - \operatorname{Cosech}^2 \lambda \cdot \operatorname{Tangh}^2 \mu \cdot \cos^2 x}} \right\} dx = \\ = \pi \lambda \frac{\operatorname{Sin} \operatorname{ch} \mu \cdot (1 + \operatorname{Sin} \operatorname{ch} \lambda)}{\operatorname{Sin} \operatorname{ch} \lambda + \sqrt{1 - \operatorname{Cosech}^2 \lambda \cdot \operatorname{Cosech}^2 \mu}} \text{ (IV, 474).}$$

- 1) $\int_0^1 li\left(\frac{1}{x}\right) \cdot \left(l\frac{1}{x}\right)^{p-1} \cdot dx = -\pi \cot p\pi \cdot \Gamma(p)$ (VIII, 542).
- 2) $\int_0^1 l\Gamma(x) \cdot dx = \frac{1}{2} l2\pi$ (VIII, 271). 3) $\int_0^1 l\Gamma(1+x) \cdot dx = -1 + \frac{1}{2} l2\pi$ V. T. 340, N. 5.
- 4) $\int_0^1 l\Gamma(1-x) \cdot dx = \frac{1}{2} l2\pi$ (VIII, 271). 5) $\int_0^1 l\Gamma(x+q) \cdot dx = \frac{1}{2} l2\pi + q lq - q$ (VIII, 322).
- 6) $\int_0^{1+\pi} l\Theta(q, x) \cdot dx = \frac{\pi}{4} l \left\{ \frac{1}{\pi} F(p) \cdot (2p)^{\frac{1}{2}} \sqrt{1-p^2}^{\frac{1}{2}} e^{\frac{\pi}{8} \frac{F'[\sqrt{1-p^2}]}{F(p)}} \right\}$ (IV, 475).
- 7) $\int_p^{p+1} l\Gamma(x) \cdot dx = \frac{1}{2} l2\pi + p(lp-1)$ V. T. 340, N. 5.
- 8) $\int_0^\infty li\left(\frac{1}{x}\right) \cdot (lx)^{p-1} \cdot dx = -\pi \sin p\pi \cdot \Gamma(p)$ (VIII, 542).
- 9) $\int_1^\infty li\left(\frac{1}{x}\right) \cdot (lx)^{p-1} \cdot dx = -\frac{\pi}{\sin p\pi} \Gamma(p)$ (VIII, 542).

- 1) $\int \operatorname{Arctg}(\operatorname{Tang}^2 x) \cdot dx = \frac{1}{8} \pi^2$ V. T. 252, N. 10.
- 2) $\int \operatorname{Arctg}(\operatorname{Tang}^3 x) \cdot dx = \frac{1}{8} \pi^2$ V. T. 252, N. 11.
- 3) $\int \operatorname{Arccot}(\operatorname{Tang}^2 x) \cdot dx = \frac{1}{8} \pi^2$ V. T. 252, N. 18.
- 4) $\int \operatorname{Arccot}(\operatorname{Tang}^3 x) \cdot dx = \frac{1}{8} \pi^2$ V. T. 252, N. 19.
- 5) $\int \operatorname{Arcsin}(p \sin x) \cdot \cos x \cdot dx = \operatorname{Arcsin} p + \frac{1}{p} \sqrt{1-p^2} - \frac{1}{p}$ V. T. 76, N. 1.
- 6) $\int \operatorname{Arctg}(p \cot x) \cdot \operatorname{Tg} x \cdot dx = \frac{\pi}{2} l(1+p)$ V. T. 250, N. 3.
- 7) $\int \operatorname{Arctg}(p \operatorname{Tg} x) \cdot \operatorname{Tg} 2x \cdot dx = \frac{\pi}{4} l \frac{1+p^2}{(1+p)^2}$ V. T. 342, N. 4, 8.

- 8) $\int \text{Arctg}(p \cot x) \cdot \text{Tg } 2x \, dx = \frac{\pi}{4} \ell \frac{(1+p)^2}{1+p^2}$ V. T. 248, N. 5.
- 9) $\int \text{Arccot}(p \text{Tg } x) \cdot \text{Tg } x \, dx = \frac{\pi}{2} \ell \frac{1+p}{p}$ V. T. 248, N. 8.
- 10) $\int \text{Arctg} \left(\frac{1}{q} \sqrt{\text{Tg } x} \right) \frac{dx}{(\sin x + p^2 \cos x)^2} = \frac{\pi}{2p(p+q)}$ V. T. 252, N. 12.
- 11) $\int \text{Arccot} \left(\frac{1}{q} \sqrt{\text{Tg } x} \right) \frac{dx}{(\sin x + p^2 \cos x)^2} = \frac{q\pi}{2p^2(p+q)}$ V. T. 252, N. 20.
- 12) $\int \text{Arctg} \{ \text{Tg } \lambda \cdot \sqrt{1-p^2 \sin^2 x} \} \cdot \sqrt{1-p^2 \sin^2 x} \, dx = \frac{\pi}{2} E(p, \lambda) - \frac{\pi}{2} \cot \lambda \cdot \{ 1 - \sqrt{1-p^2 \sin^2 \lambda} \}$
(VIII, 309*).
- 13) $\int \text{Arccot} \{ \text{Tg } \lambda \cdot \sqrt{1-p^2 \sin^2 x} \} \cdot \sqrt{1-p^2 \sin^2 x} \, dx = \frac{\pi}{2} E[p, \text{Arccot} \{ \text{Tg } \lambda \cdot \sqrt{1-p^2} \}] -$
 $-\frac{\pi}{2} \cot \lambda \cdot \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\}$ (VIII, 309*).
- 14) $\int \text{Arctg} \left\{ \frac{p \sin(r \text{Tg } x)}{1+p \cos(r \text{Tg } x)} \right\} \cdot \text{Tg } x \, dx = \frac{\pi}{2} \ell(1+p e^{-r})$ V. T. 446, N. 8.

- 1) $\int \text{Arctg}(p \sin x) \frac{dx}{\sin x} = \frac{\pi}{2} \ell \{ p + \sqrt{1+p^2} \} [p \geq 1]$ V. T. 244, N. 11.
- 2) $\int \text{Arctg}(p \cos x) \frac{dx}{\cos x} = \frac{\pi}{2} \ell \{ p + \sqrt{1+p^2} \} [p \geq 1]$ V. T. 244, N. 11.
- 3) $\int \text{Arctg}(p \cot x) \frac{\text{Tg } x}{\cos 2x} \, dx = -\frac{\pi}{4} \ell(1+p^2)$ V. T. 248, N. 10.
- 4) $\int \text{Arctg}(p \text{Tg } x) \frac{dx}{\text{Tg } x} = \frac{\pi}{2} \ell(1+p)$ (VIII, 612).
- 5) $\int \text{Arctg} \left\{ \frac{p \sin(r \cot x)}{1+p \cos(r \cot x)} \right\} \frac{dx}{\text{Tg } x} = \frac{\pi}{2} \ell(1+p e^{-r})$ V. T. 446, N. 8.
- 6) $\int \text{Arctg}(p \text{Tg } x) \frac{\cos^2 x}{\sin x \cdot \cos 2x} \, dx = \frac{\pi}{8} \ell \{ (1+p)^2 (1+p^2) \}$ V. T. 342, N. 4, 8.

F. Circ. Dir. en dén. monôme;
Circ. Inverse à un facteur.

TABLE 342, suite.

Lim. 0 et $\frac{\pi}{2}$.

- 7) $\int \operatorname{Arctg}(p \cot x) \frac{\sin^2 x dx}{\cos x \cdot \cos 2x} = -\frac{\pi}{8} l \{ (1+p^2)(1+p)^2 \}$ V. T. 341, N. 6 et T. 342, N. 3.
- 8) $\int \operatorname{Arctg}(p \operatorname{Tg} x) \frac{dx}{\operatorname{Tg} x \cdot \cos 2x} = \frac{\pi}{4} l(1+p^2)$ V. T. 248, N. 10.
- 9) $\int \{ \operatorname{Arctg}((p \operatorname{Tg} x)) - \operatorname{Arctg}((q \operatorname{Tg} x)) \} \frac{dx}{\sin 2x} = \frac{\pi}{4} l \frac{p}{q}$ V. T. 247, N. 4.
- 10) $\int \{ \operatorname{Arctg}((r + p \operatorname{Tg} x)) - \operatorname{Arctg}((r + q \operatorname{Tg} x)) \} \frac{dx}{\sin 2x} = \frac{1}{2} \operatorname{Arccot} r \cdot l \frac{p}{q}$ V. T. 252, N. 1.
- 11) $\int \{ \operatorname{Arctg}((r + p \cot x)) - \operatorname{Arctg}((r + q \cot x)) \} \frac{dx}{\sin 2x} = \frac{1}{2} \operatorname{Arccot} r \cdot l \frac{p}{q}$ V. T. 252, N. 1.
- 12) $\int \{ \operatorname{Arccot}((p \operatorname{Tg} x)) - \operatorname{Arccot}((q \operatorname{Tg} x)) \} \frac{dx}{\sin 2x} = \frac{\pi}{4} l \frac{q}{p}$ V. T. 247, N. 4.
- 13) $\int \{ \sin^2 x \cdot \operatorname{Arccot}(\sin x) - \operatorname{Arctg}(\sin x) \} \frac{dx}{\sin 2x} = -\frac{1}{8} \pi l 2$ V. T. 232, N. 1.

F. Circ. Dir. en dén. monôme;
Circ. Inverse à plusieurs fact.

TABLE 343.

Lim. 0 et $\frac{\pi}{2}$.

- 1) $\int \operatorname{Arctg}\left(\frac{1}{q} \operatorname{Tg} x\right) \cdot \operatorname{Arctg}\left(\frac{1}{p} \operatorname{Tg} x\right) \frac{dx}{\sin^2 x} = \frac{\pi}{2} \left\{ \frac{1}{q} l \frac{p+q}{p} + \frac{1}{p} l \frac{p+q}{q} \right\}$ V. T. 247, N. 8.
- 2) $\int \operatorname{Arctg}\left(\frac{p-r}{\operatorname{Tg} x + pr \cot x}\right) \cdot \operatorname{Arccot}(q \operatorname{Tg} x) \frac{dx}{\sin^2 x} = \infty$ V. T. 252, N. 4.
- 3) $\int \operatorname{Arctg}\left(\frac{p-r}{\cot x + pr \operatorname{Tg} x}\right) \cdot \operatorname{Arccot}(q \operatorname{Tg} x) \frac{dx}{\sin^2 x} = \infty$ V. T. 252, N. 5.
- 4) $\int \operatorname{Arctg}\left(\frac{p-r}{\operatorname{Tg} x + pr \cot x}\right) \cdot \operatorname{Arctg}(q \operatorname{Tg} x) \frac{dx}{\sin^2 x} = \frac{\pi}{2} \left\{ q l \frac{p}{r} + \frac{qr+1}{r} l \frac{qr+1}{q} - \frac{pq+1}{p} l \frac{pq+1}{p} + \frac{p-r}{pr} l q \right\}$ V. T. 252, N. 7.
- 5) $\int \operatorname{Arctg}\left(\frac{p-r}{pr \operatorname{Tg} x + \cot x}\right) \cdot \operatorname{Arctg}(q \operatorname{Tg} x) \frac{dx}{\sin^2 x} = \frac{\pi}{2} \left\{ p l \frac{p+q}{p} - r l \frac{q+r}{r} + q l \frac{p+q}{q+r} \right\}$
V. T. 252, N. 8.
- 6) $\int \operatorname{Arctg}\left(\frac{p-r}{\operatorname{Tg} x + pr \cot x}\right) \cdot \operatorname{Arctg}\left(\frac{q-s}{\operatorname{Tg} x + qs \cot x}\right) \frac{dx}{\sin^2 x} = \frac{\pi}{2} \left\{ \frac{q-s}{qs} l \frac{p}{r} + \frac{p-r}{pr} l \frac{q}{s} + \frac{1}{p} l \frac{p+q}{p+s} + \frac{1}{q} l \frac{q+p}{q+r} + \frac{1}{r} l \frac{r+s}{r+q} + \frac{1}{s} l \frac{s+r}{s+p} \right\}$ V. T. 252, N. 6.

- 7) $\int \operatorname{Arctg} \left(\frac{p-r}{pr \operatorname{Tg} x + \operatorname{Cot} x} \right) \cdot \operatorname{Arctg} \left(\frac{q-s}{\operatorname{Tg} x + qs \operatorname{Cot} x} \right) \frac{dx}{\sin^2 x} = \frac{\pi}{2} \left\{ (p-r) \operatorname{l} \frac{q}{s} - \frac{pq+1}{q} \operatorname{l}(1+pq) + \right.$
 $\left. + \frac{ps+1}{s} \operatorname{l}(1+ps) - \frac{1+rs}{s} \operatorname{l}(1+rs) + \frac{1+qr}{q} \operatorname{l}(1+qr) \right\}$ V. T. 252, N. 9.
- 8) $\int \left\{ \operatorname{Arctg} \left(\frac{p-r}{\operatorname{Tg} x + pr \operatorname{Cot} x} \right) \right\}^2 \frac{dx}{\sin^2 x} = \frac{2\pi}{r} \operatorname{l} p + \frac{2\pi}{p} \operatorname{l} r - 2\pi \frac{p+r}{pr} \operatorname{l} \frac{p+r}{2}$ V. T. 252, N. 3.
- 9) $\int \operatorname{Arctg} \left(\frac{p-r}{pr \operatorname{Tg} x + \operatorname{Cot} x} \right) \cdot \operatorname{Arctg} \left(\frac{q-s}{qs \operatorname{Tg} x + \operatorname{Cot} x} \right) \frac{dx}{\cos^2 x} = \frac{\pi}{2} \left\{ \frac{q-s}{qs} \operatorname{l} \frac{p}{r} + \frac{p-r}{pr} \operatorname{l} \frac{q}{s} + \frac{1}{p} \operatorname{l} \frac{p+q}{p+s} + \right.$
 $\left. + \frac{1}{q} \operatorname{l} \frac{p+q}{q+r} + \frac{1}{r} \operatorname{l} \frac{r+s}{r+q} + \frac{1}{s} \operatorname{l} \frac{s+p}{s+p} \right\}$ V. T. 252, N. 6.
- 10) $\int \operatorname{Arctg} \left(\frac{p-r}{\operatorname{Tg} x + pr \operatorname{Cot} x} \right) \cdot \operatorname{Arctg} \left(\frac{q-s}{qs \operatorname{Tg} x + \operatorname{Cot} x} \right) \frac{dx}{\cos^2 x} = \frac{\pi}{2} \left\{ (p-r) \operatorname{l} \frac{q}{s} - \frac{pq+1}{q} \operatorname{l}(1+pq) + \right.$
 $\left. + \frac{ps+1}{s} \operatorname{l}(1+ps) - \frac{rs+1}{s} \operatorname{l}(1+rs) + \frac{qr+1}{q} \operatorname{l}(1+qr) \right\}$ V. T. 252, N. 9.
- 11) $\int \operatorname{Arctg} \left(\frac{p-r}{pr \operatorname{Tg} x + \operatorname{Cot} x} \right) \cdot \operatorname{Arccot}(q \operatorname{Tg} x) \frac{dx}{\cos^2 x} = \frac{\pi}{2} \left\{ \frac{1}{q} \operatorname{l} \frac{p}{r} + \frac{q+r}{qr} \operatorname{l}(q+r) - \right.$
 $\left. - \frac{p+q}{pq} \operatorname{l}(p+q) - \frac{p-r}{pr} \operatorname{l} q \right\}$ V. T. 252, N. 7.
- 12) $\int \operatorname{Arctg} \left(\frac{p-r}{\operatorname{Tg} x + pr \operatorname{Cot} x} \right) \cdot \operatorname{Arccot}(q \operatorname{Tg} x) \frac{dx}{\cos^2 x} = \frac{\pi}{2} \left\{ p \operatorname{l} \frac{1+pq}{pq} - r \operatorname{l} \frac{1+qr}{qr} + \frac{1}{q} \operatorname{l} \frac{pq+1}{qr+1} \right\}$
V. T. 252, N. 8.
- 13) $\int \operatorname{Arccot}(p \operatorname{Tg} x) \cdot \operatorname{Arccot}(q \operatorname{Tg} x) \frac{dx}{\cos^2 x} = \frac{\pi}{2} \left\{ \frac{1}{q} \operatorname{l} \frac{p+q}{p} + \frac{1}{p} \operatorname{l} \frac{p+q}{q} \right\}$ V. T. 247, N. 8.
- 14) $\int \left\{ \operatorname{Arctg} \left(\frac{p-r}{pr \operatorname{Tg} x + \operatorname{Cot} x} \right) \right\}^2 \frac{dx}{\cos^2 x} = \frac{2\pi}{r} \operatorname{l} p + \frac{2\pi}{p} \operatorname{l} r - 2\pi \frac{p+r}{pr} \operatorname{l} \frac{p+r}{2}$ V. T. 252, N. 3.

- 1) $\int \operatorname{Arctg} \left(\frac{2p \cos^2 x}{1-p^2 \cos^2 x} \right) \frac{dx}{r^2 \cos^2 x + q^2 \sin^2 x} = \frac{\pi}{qr} \operatorname{Arctg} \frac{pq}{q+r}$ (VIII, 275*).
- 2) $\int \operatorname{Arcsin}(p \sin x) \frac{\sin x}{\sqrt{1-p^2 \sin^2 x}} dx = -\frac{\pi}{4p} \operatorname{l}(1-p^2)$ V. T. 239, N. 1.
- 3) $\int \operatorname{Arctg} \{ \operatorname{Tg} \lambda \cdot \sqrt{1-p^2 \sin^2 x} \} \frac{dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{\pi}{2} F(p, \lambda)$ (VIII, 340).

- 4) $\int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1 - p^2 \sin^2 x} \} \frac{\sin^2 x}{\sqrt{1 - p^2 \sin^2 x}} dx = \frac{\pi}{2p^2} [F(p, \lambda) - E(p, \lambda) +$
 $+ \text{Cot} \lambda \cdot \{1 - \sqrt{1 - p^2 \sin^2 \lambda}\}]$ (VIII, 341).
- 5) $\int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1 - p^2 \sin^2 x} \} \frac{\cos^2 x}{\sqrt{1 - p^2 \sin^2 x}} dx = \frac{\pi}{2p^2} [E(p, \lambda) - (1 - p^2) F(p, \lambda) +$
 $+ \text{Cot} \lambda \cdot \{ \sqrt{1 - p^2 \sin^2 \lambda} - 1 \}]$ (VIII, 342).
- 6) $\int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1 - p^2 \sin^2 x} \} \frac{\cos 2x}{\sqrt{1 - p^2 \sin^2 x}} dx = \frac{\pi}{2p^2} [2E(p, \lambda) - (2 - p^2) F(p, \lambda) +$
 $+ 2 \text{Cot} \lambda \cdot \{ \sqrt{1 - p^2 \sin^2 \lambda} - 1 \}]$ V. T. 344, N. 4, 5.
- 7) $\int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1 - p^2 \sin^2 x} \} \frac{dx}{\sqrt{1 - p^2 \sin^2 x}} = \frac{\pi}{2(1 - p^2)} [E(p, \lambda) -$
 $- \text{Tg} \lambda \cdot \{ \sqrt{1 - p^2 \sin^2 \lambda} - \sqrt{1 - p^2} \}]$ (VIII, 340).
- 8) $\int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1 - p^2 \sin^2 x} \} \frac{\sin^2 x}{\sqrt{1 - p^2 \sin^2 x}} dx = \frac{\pi}{2p^2(1 - p^2)} [E(p, \lambda) - (1 - p^2) F(p, \lambda) -$
 $- \text{Tg} \lambda \cdot \{ \sqrt{1 - p^2 \sin^2 \lambda} - \sqrt{1 - p^2} \}]$ (VIII, 342).
- 9) $\int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1 - p^2 \sin^2 x} \} \frac{\cos^2 x}{\sqrt{1 - p^2 \sin^2 x}} dx = \frac{\pi}{2p^2} [F(p, \lambda) - E(p, \lambda) +$
 $+ \text{Tg} \lambda \cdot \{ \sqrt{1 - p^2 \sin^2 \lambda} - \sqrt{1 - p^2} \}]$ (VIII, 342).
- 10) $\int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1 - p^2 \sin^2 x} \} \frac{\cos 2x}{\sqrt{1 - p^2 \sin^2 x}} dx = \frac{\pi}{2p^2(1 - p^2)} [2(1 - p^2) F(p, \lambda) -$
 $- (2 - p^2) E(p, \lambda) + (2 - p^2) \text{Tg} \lambda \cdot \{ \sqrt{1 - p^2 \sin^2 \lambda} - \sqrt{1 - p^2} \}]$ V. T. 344, N. 8, 9.
- 11) $\int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1 - p^2 \sin^2 x} \} \frac{\sin^4 x}{\sqrt{1 - p^2 \sin^2 x}} dx = \frac{\pi}{2p^4(1 - p^2)} [(2 - p^2) E(p, \lambda) -$
 $- 2(1 - p^2) F(p, \lambda) + \{ \text{Tg} \lambda \cdot \sqrt{1 - p^2} - (1 - p^2) \text{Cot} \lambda \} + \{ (1 - p^2) \text{Cot} \lambda - \text{Tg} \lambda \}$
 $\cdot \sqrt{1 - p^2 \sin^2 \lambda}]$ V. T. 344, N. 4, 8.
- 12) $\int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1 - p^2 \sin^2 x} \} \frac{\sin^2 x \cdot \cos^2 x}{\sqrt{1 - p^2 \sin^2 x}} dx = \frac{\pi}{2p^4} [(2 - p^2) F(p, \lambda) - 2E(p, \lambda) +$
 $+ (\text{Cot} \lambda - \text{Tg} \lambda \cdot \sqrt{1 - p^2}) + (\text{Tg} \lambda - \text{Cot} \lambda) \sqrt{1 - p^2 \sin^2 \lambda}]$ V. T. 344, N. 5, 9.
- 13) $\int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1 - p^2 \sin^2 x} \} \frac{\cos^4 x}{\sqrt{1 - p^2 \sin^2 x}} dx = \frac{\pi}{2p^4} [(2 - p^2) E(p, \lambda) - 2(1 - p^2) F(p, \lambda) +$
 $+ (\text{Tg} \lambda \cdot \sqrt{1 - p^2} - \text{Cot} \lambda) + \{ \text{Cot} \lambda - (1 - p^2) \text{Tg} \lambda \} \sqrt{1 - p^2 \sin^2 \lambda}]$ V. T. 344, N. 9, 12.

- 14) $\int \operatorname{Arccot} \{ \operatorname{Tg} \lambda \cdot \sqrt{1-p^2 \sin^2 x} \} \frac{dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{\pi}{2} F(p, \phi) \text{ (VIII, 341).}$
- 15) $\int \operatorname{Arccot} \{ \operatorname{Tg} \lambda \cdot \sqrt{1-p^2 \sin^2 x} \} \frac{\sin^2 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{\pi}{2p^2} \left[F(p, \phi) - E(p, \phi) + \right.$
 $\left. + \operatorname{Cot} \lambda \cdot \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} \right] \text{ (VIII, 342).}$
- 16) $\int \operatorname{Arccot} \{ \operatorname{Tg} \lambda \cdot \sqrt{1-p^2 \sin^2 x} \} \frac{\cos^2 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{\pi}{2p^2} \left[E(p, \phi) - (1-p^2) F(p, \phi) - \right.$
 $\left. - \operatorname{Cot} \lambda \cdot \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} \right] \text{ (VIII, 342).}$
- 17) $\int \operatorname{Arccot} \{ \operatorname{Tg} \lambda \cdot \sqrt{1-p^2 \sin^2 x} \} \frac{\cos 2x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{\pi}{2p^2} \left[2E(p, \phi) - (2-p^2) F(p, \phi) - \right.$
 $\left. - 2 \operatorname{Cot} \lambda \cdot \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} \right] \text{ V. T. 344, N. 15, 16.}$
- 18) $\int \operatorname{Arccot} \{ \operatorname{Tg} \lambda \cdot \sqrt{1-p^2 \sin^2 x} \} \frac{dx}{\sqrt{1-p^2 \sin^2 x}^3} = \frac{\pi}{2} \left[\frac{1}{1-p^2} E(p, \phi) - \right.$
 $\left. - \operatorname{Tg} \lambda \cdot \left\{ \frac{1}{\sqrt{1-p^2}} - \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} \right\} \right] \text{ (VIII, 341).}$
- 19) $\int \operatorname{Arccot} \{ \operatorname{Tg} \lambda \cdot \sqrt{1-p^2 \sin^2 x} \} \frac{\sin^2 x}{\sqrt{1-p^2 \sin^2 x}^3} dx = \frac{\pi}{2p^2} \left[\frac{1}{1-p^2} E(p, \phi) - F(p, \phi) - \right.$
 $\left. - \operatorname{Tg} \lambda \cdot \left\{ \frac{1}{\sqrt{1-p^2}} - \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} \right\} \right] \text{ (VIII, 342).}$
- 20) $\int \operatorname{Arccot} \{ \operatorname{Tg} \lambda \cdot \sqrt{1-p^2 \sin^2 x} \} \frac{\cos^2 x}{\sqrt{1-p^2 \sin^2 x}^3} dx = \frac{\pi}{2p^2} \left[F(p, \phi) - E(p, \phi) + \right.$
 $\left. + (1-p^2) \operatorname{Tg} \lambda \cdot \left\{ \frac{1}{\sqrt{1-p^2}} - \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} \right\} \right] \text{ (VIII, 343).}$
- 21) $\int \operatorname{Arccot} \{ \operatorname{Tg} \lambda \cdot \sqrt{1-p^2 \sin^2 x} \} \frac{\cos 2x}{\sqrt{1-p^2 \sin^2 x}^3} dx = \frac{\pi}{2p^2} \left[2F(p, \phi) - \frac{2-p^2}{1-p^2} E(p, \phi) + \right.$
 $\left. + (2-p^2) \operatorname{Tg} \lambda \cdot \left\{ \frac{1}{\sqrt{1-p^2}} - \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} \right\} \right] \text{ V. T. 344, N. 19, 20.}$
- 22) $\int \operatorname{Arccot} \{ \operatorname{Tg} \lambda \cdot \sqrt{1-p^2 \sin^2 x} \} \frac{\sin^4 x}{\sqrt{1-p^2 \sin^2 x}^3} dx = \frac{\pi}{2p^3} \left[\frac{2-p^2}{1-p^2} E(p, \phi) - 2F(p, \phi) + \right.$
 $\left. + \left(\operatorname{Cot} \lambda - \frac{\operatorname{Tg} \lambda}{\sqrt{1-p^2}} \right) + \frac{\operatorname{Tg} \lambda - \operatorname{Cot} \lambda}{\sqrt{1-p^2 \sin^2 \lambda}} \right] \text{ V. T. 344, N. 13, 19.}$

$$23) \int \operatorname{Arccot} \{ Tg \lambda . \sqrt{1-p^2 \sin^2 x} \} \frac{\sin^2 x . \cos^2 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{\pi}{2p^2} \left[(2-p^2) F(p, \varphi) - 2 E(p, \varphi) + \right. \\ \left. + (Tg \lambda . \sqrt{1-p^2} - \cot \lambda) + \frac{\cot \lambda - (1-p^2) Tg \lambda}{\sqrt{1-p^2 \sin^2 \lambda}} \right] \text{ V. T. 344, N. 16, 20.}$$

$$24) \int \operatorname{Arccot} \{ Tg \lambda . \sqrt{1-p^2 \sin^2 x} \} \frac{\cos^4 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{\pi}{2p^2} \left[(2-p^2) E(p, \varphi) - 2(1-p^2) \right. \\ \left. F(p, \varphi) + (\cot \lambda - Tg \lambda . \sqrt{1-p^2}) + \frac{(1-p^2)^2 Tg \lambda - \cot \lambda}{\sqrt{1-p^2 \sin^2 \lambda}} \right] \text{ V. T. 344, N. 20, 23.}$$

Dans 14) à 24) on a $\cot \varphi = Tg \lambda . \sqrt{1-p^2}$.

$$1) \int \operatorname{Arctg} (\cos x) . dx = 0 \text{ V. T. 219, N. 11.}$$

$$2) \int \operatorname{Arctg} \left(\frac{\sin^2 x}{\sqrt{p^2-1}} \right) . dx = 4 \sum_0^{\infty} \frac{\{p - \sqrt{p^2-1}\}^{2n+1}}{(2n+1)^2} [p > 1] \text{ V. T. 219, N. 16.}$$

$$3) \int \operatorname{Arctg} \left(\frac{p \sin x}{1-p \cos x} \right) . \sin x dx = \frac{1}{2} p \pi [p^2 < 1] \text{ (VIII, 583).}$$

$$4) \int \operatorname{Arctg} \left(\frac{p \sin x}{1-p \cos x} \right) . \sin ax dx = \frac{\pi}{2a} p^a [p^2 \leq 1] \text{ (VIII, 276).}$$

$$5) \int \operatorname{Arctg} \left(\frac{p \sin x}{1-p \cos x} \right) . \sin ax . \cos x dx = \frac{\pi}{4} \left(\frac{p^{a+1}}{a+1} + \frac{p^{a-1}}{a-1} \right) \text{ (VIII, 583).}$$

$$6) \int \operatorname{Arctg} \left(\frac{p \sin x}{1-p \cos x} \right) . \cos ax . \sin x dx = \frac{\pi}{4} \left(\frac{p^{a+1}}{a+1} - \frac{p^{a-1}}{a-1} \right) \text{ (VIII, 583).}$$

$$7) \int \operatorname{Arctg} \left(\frac{2p \sin x}{1-p^2} \right) . \sin 2ax dx = 0 \text{ V. T. 345, N. 4.}$$

$$8) \int \operatorname{Arctg} \left(\frac{2p \sin x}{1-p^2} \right) . \sin \{(2a-1)x\} dx = \frac{\pi}{2a-1} p^{2a-1} \text{ V. T. 345, N. 4.}$$

$$9) \int \operatorname{Arctg} \left(\frac{2p \sin x}{1-p^2} \right) . \sin 2ax . \cos x dx = \frac{\pi}{2} \left(\frac{p^{2a+1}}{2a+1} + \frac{p^{2a-1}}{2a-1} \right) \text{ V. T. 345, N. 8.}$$

$$10) \int \operatorname{Arctg} \left(\frac{2p \sin x}{1-p^2} \right) . \cos 2ax . \sin x dx = \frac{\pi}{2} \left(\frac{p^{2a+1}}{2a+1} - \frac{p^{2a-1}}{2a-1} \right) \text{ V. T. 345 N. 8.}$$

$$11) \int \operatorname{Arctg} \left(\frac{2p \sin x}{1-p^2} \right) \cdot \sin \{(2a-1)x\} \cdot \cos x dx = 0 \quad \text{V. T. 345, N. 7.}$$

$$12) \int \operatorname{Arctg} \left(\frac{2p \sin x}{1-p^2} \right) \cdot \cos \{(2a-1)x\} \cdot \sin x dx = 0 \quad \text{V. T. 345, N. 7.}$$

$$13) \int \operatorname{Arctg} \left(\frac{p \sin 2x}{1-p \cos 2x} \right) \cdot \sin 2ax dx = \frac{\pi}{a} p^a \quad \text{V. T. 345, N. 4.}$$

$$14) \int \operatorname{Arctg} \left(\frac{p \sin 2x}{1-p \cos 2x} \right) \cdot \sin \{(2a-1)x\} dx = 0 \quad \text{V. T. 345, N. 4.}$$

$$15) \int \operatorname{Arctg} \left(\frac{p \sin 2x}{1-p \cos 2x} \right) \cdot \sin 2ax \cdot \cos x dx = 0 \quad \text{V. T. 345, N. 14.}$$

$$16) \int \operatorname{Arctg} \left(\frac{p \sin 2x}{1-p \cos 2x} \right) \cdot \cos 2ax \cdot \sin x dx = 0 \quad \text{V. T. 345, N. 14.}$$

$$17) \int \operatorname{Arctg} \left(\frac{p \sin 2x}{1-p \cos 2x} \right) \cdot \sin \{(2a-1)x\} \cdot \cos x dx = \frac{\pi}{4} \left\{ \frac{1}{a} p^a + \frac{1}{a-1} p^{a-1} \right\} \quad \text{V. T. 345, N. 13.}$$

$$18) \int \operatorname{Arctg} \left(\frac{p \sin 2x}{1-p \cos 2x} \right) \cdot \cos \{(2a-1)x\} \cdot \sin x dx = \frac{\pi}{4} \left\{ \frac{1}{a} p^a - \frac{1}{a-1} p^{a-1} \right\} \quad \text{V. T. 345, N. 13.}$$

Dans 5) à 18) on a $[p < 1]$.

$$19) \int \operatorname{Arctg} \left(\frac{p \sin x}{1-p \cos x} \right) \cdot \operatorname{Tg} \frac{1}{2} x dx = \pi l(1+p) [p^2 \leq 1] \quad (\text{VIII, 563}).$$

$$20) \int \operatorname{Arctg} \left(\frac{2p \cos x}{1-p^2} \right) \cdot \cos \{(2a+1)x\} dx = \pi p^{2a+1} \frac{(-1)^a}{2a+1} \quad (\text{VIII, 277}).$$

$$21) \int (1+2p \cos x + p^2)^{\frac{1}{2}a} \sin \left\{ a \operatorname{Arctg} \left(\frac{p \sin x}{1+p \cos x} \right) \right\} \cdot \sin bx dx = \frac{\pi}{2} p^b \binom{a}{b} \quad (\text{VIII, 277}).$$

$$22) \int (1+2p \cos x + p^2)^{\frac{1}{2}a} \cos \left\{ a \operatorname{Arctg} \left(\frac{p \sin x}{1+p \cos x} \right) \right\} \cdot \cos bx dx = \frac{\pi}{2} p^b \binom{a}{b} \quad (\text{VIII, 277}).$$

$$23) \int (q^2 + 2qs \cos x + s^2)^{\frac{1}{2}p} \cos \left\{ rx - p \operatorname{Arctg} \left(\frac{q \sin x}{s + q \cos x} \right) \right\} dx = \frac{\pi q^r s^{p-r} \Gamma(p-r+1)}{\Gamma(1+r) \Gamma(1+p)} [s > q] \quad (\text{IV, 554*}).$$

$$24) \int (1+2q \cos x + q^2)^{\frac{1}{2}r} (p^2 + 2pq \cos x + q^2)^{\frac{1}{2}s} \sin \left\{ r \operatorname{Arccos} \left(\frac{1+q \cos x}{\sqrt{1+2q \cos x + q^2}} \right) \right\} \cdot \sin \left\{ s \operatorname{Arccos} \left(\frac{q+p \cos x}{\sqrt{p^2+2pq \cos x + q^2}} \right) \right\} dx = \frac{\pi}{2} q^s \sum_1^{\infty} \binom{r}{n} \binom{s}{n} p^n \quad (\text{VIII, 632}).$$

$$25) \int (1 + 2q \cos x + q^2)^{\frac{1}{2}r} (p^2 + 2pq \cos x + q^2)^{\frac{1}{2}s} \cos \left\{ r \operatorname{Arccos} \left(\frac{1 + q \cos x}{\sqrt{1 + 2q \cos x + q^2}} \right) \right\} \cdot \\ \cdot \cos \left\{ s \operatorname{Arccos} \left(\frac{q + p \cos x}{\sqrt{p^2 + 2pq \cos x + q^2}} \right) \right\} dx = \frac{\pi}{2} q^r \left[2 + \sum_1^{\infty} \binom{r}{n} \binom{s}{n} p^n \right] \text{ (VIII, 692).}$$

$$1) \int \operatorname{Arctg} \left(\frac{p \sin x}{1 - p \cos x} \right) \frac{dx}{\sin x} = \frac{\pi}{2} l \frac{1+p}{1-p} [p^2 \leq 1] \text{ (VIII, 563).}$$

$$2) \int \operatorname{Arctg} \left(\frac{p \sin x}{1 - p \cos x} \right) \frac{dx}{\operatorname{Tg} \frac{1}{2} x} = -\pi l(1-p) [p^2 \leq 1] \text{ (VIII, 563).}$$

$$3) \int \operatorname{Arctg} \left(\frac{p \sin x}{1 - p \cos x} \right) \frac{dx}{\operatorname{Tg} x} = -\frac{\pi}{2} l(1-p^2) [p^2 < 1], = \frac{\pi}{2} l \frac{p^2 - 1}{4p^2} [p^2 > 1] \text{ (VIII, 582).}$$

$$4) \int \operatorname{Arctg} \left(\frac{p \sin x}{1 - p \cos x} \right) \frac{\cos^2 x}{\sin x} dx = \frac{\pi}{2} \left\{ l \frac{1+p}{1-p} - p \right\} \text{ (VIII, 583).}$$

$$5) \int \operatorname{Arctg} \left(\frac{2p \sin x}{1 - p^2} \right) \frac{dx}{\sin x} = \pi l \frac{1+p}{1-p} \text{ V. T. 346, N. 1.}$$

$$6) \int \operatorname{Arctg} \left(\frac{2p \sin x}{1 - p^2} \right) \frac{dx}{\operatorname{Tg} x} = 0 \text{ V. T. 346, N. 3.}$$

$$7) \int \operatorname{Arctg} \left(\frac{2p \sin x}{1 - p^2} \right) \frac{\cos^2 x}{\sin x} dx = \pi \left\{ l \frac{1+p}{1-p} - p \right\} \text{ V. T. 346, N. 4.}$$

Dans 4) à 7) on a $[p < 1]$.

$$8) \int \operatorname{Arctg} \left(\frac{p \sin 2x}{1 - p \cos 2x} \right) \frac{dx}{\sin x} = 0 [p < 1] \text{ V. T. 346, N. 1.}$$

$$9) \int \operatorname{Arctg} \left(\frac{p \sin 2x}{1 - p \cos 2x} \right) \frac{dx}{\operatorname{Tg} x} = -\pi l(1-p) [p < 1], = \pi l \frac{p^2 - 1}{4p} [p > 1] \text{ V. T. 346, N. 3.}$$

$$10) \int \operatorname{Arctg} \left(\frac{p \sin 2x}{1 - p \cos 2x} \right) \frac{\cos^2 x}{\sin x} dx = 0 [p < 1] \text{ V. T. 346, N. 4.}$$

$$11) \int \operatorname{Arctg} \left(\frac{p \sin x}{1 - p \cos x} \right) \frac{\sin x}{1 - 2q \cos x + q^2} dx = -\frac{\pi}{2q} l(1-pq) [p^2 \leq 1, q^2 \leq 1] \text{ (VIII, 560).}$$

$$12) \int \sin \left\{ r \operatorname{Arccos} \left(\frac{q + p \cos x}{\sqrt{p^2 + 2pq \cos x + q^2}} \right) \right\} \frac{\sin x}{1 - 2q^r \cos x + q^{2r}} (p^2 + 2pq \cos x + q^2)^{\frac{1}{2}r} dx = \\ = \frac{\pi}{2} q^{r-1} \sum_1^{\infty} \binom{r}{ns} p^{ns} \quad (\text{VIII, 635}).$$

$$13) \int \cos \left\{ r \operatorname{Arccos} \left(\frac{q + p \cos x}{\sqrt{p^2 + 2pq \cos x + q^2}} \right) \right\} \frac{1 - q^r \cos x}{1 - 2q^r \cos x + q^{2r}} (p^2 + 2pq \cos x + q^2)^{\frac{1}{2}r} dx = \\ = \frac{\pi}{2} q^r \left\{ 2 + \sum_1^{\infty} \binom{r}{ns} p^{ns} \right\} \quad (\text{VIII, 634}).$$

$$14) \int \operatorname{Arctg} \left(\frac{q \sin x}{p + q \cos x} \right) \frac{\sin x}{\sqrt{1 - 2p \cos x + p^2}} dx = \frac{1+q}{pq} \frac{p^2+q}{p-q} \frac{p+q}{p+1} \Pi' \left\{ \frac{4pq}{(p-q)^2} \frac{2\sqrt{p}}{1+p} \right\} - \\ - \frac{(1+q)(p-q^2)}{pq} F(p) - \frac{2}{p} E(p) + \frac{1+p}{p} D, \text{ où } D = \pi [q < -p], = \frac{1-p}{1+p} \frac{\pi}{2} [q = -p], = \\ = 0 [-p < q < p], = \frac{\pi}{2} [q = p], = \pi [q > p] \quad (\text{IV, 480*}).$$

$$15) \int \operatorname{Arctg} \left\{ \frac{p \cos x}{\sqrt{q^2 - p^2 \cos^2 x}} \right\} \frac{\cos x}{\sqrt{q^2 - p^2 \cos^2 x}} dx = \frac{\pi}{2p} l \frac{q}{q-p^2} \quad (\text{IV, 481}).$$

$$16) \int \operatorname{Arctg} \left\{ \frac{\operatorname{Tg} \lambda}{\sqrt{1 - p^2 \sin^2 \lambda}} \sqrt{1 - 2p \cos x + p^2} \right\} \frac{dx}{\sqrt{1 - 2p \cos x + p^2}} = \pi F(p, \lambda) \quad (\text{IV, 480}).$$

$$1) \int \operatorname{Arccot} \frac{x}{q} \cdot \sin px dx = \frac{\pi}{2p} (1 - e^{-pq}) \quad (\text{VIII, 452}).$$

$$2) \int \operatorname{Arccot} \frac{x}{q} \cdot \cos px dx = \frac{1}{2p} \{ e^{-pq} Ei(pq) - e^{pq} Ei(-pq) \} \quad (\text{VIII, 597}).$$

$$3) \int \operatorname{Arctg} \frac{p}{x} \cdot \cos^{2a-1} x \cdot \sin x dx = -\frac{\pi}{4a} + \frac{\pi}{2a} \frac{e^p + e^{-p}}{e^p - e^{-p}} \sum_0^{\infty} \frac{3^{a+n/2}}{2^{a+n/2}} \left(\frac{2}{e^p + e^{-p}} \right)^{2n} \quad (\text{VIII, 420}).$$

$$4) \int \operatorname{Arctg} \frac{p}{x} \cdot \cos^{2a} x \cdot \sin x dx = \frac{-\pi}{2(2a+1)} + \frac{\pi}{2(2a+1)} \sum_1^{\infty} \frac{3^{a+n/2}}{2^{a+n/2}} \left(\frac{2}{e^p + e^{-p}} \right)^{2n-1} \quad (\text{VIII, 420}).$$

$$5) \int \operatorname{Arctg} \left(\frac{p^2 \sin^2 x \cdot \sin 2x}{x^2 - p^2 \sin^2 x \cdot \cos 2x} \right) \cdot \operatorname{Tg} x dx = \pi l \frac{e^p - e^{-p}}{2}$$

$$6) \int \operatorname{Arctg} \left(\frac{p^2 \sin^2 x \cdot \sin 2x}{x^2 + p^2 \sin^2 x \cdot \cos 2x} \right) \cdot \operatorname{Tg} x dx = \pi l \operatorname{Sec} p$$

Sur 5) et 6) voyez W. R. Hamilton, L. & E. Phil. Mag. 23, 360.

F. Circul. Directe;
Circul. Inverse.

TABLE 347, suite.

Lim. 0 et ∞ .

- 7) $\int \cos^{p+1} \left(\operatorname{Arctg} \frac{x}{q} \right) \cdot \sin \left\{ (p+1) \operatorname{Arctg} \frac{x}{q} \right\} \cdot \sin x \, dx = \frac{\pi q^{p+1} e^{-q}}{2 \Gamma(p+1)} \quad \text{V. T. 43, N. 12.}$
- 8) $\int \cos^{p+1} \left(\operatorname{Arctg} \frac{x}{q} \right) \cdot \cos \left\{ (p+1) \operatorname{Arctg} \frac{x}{q} \right\} \cdot \cos x \, dx = \frac{\pi q^{p+1} e^{-q}}{2 \Gamma(p+1)} \quad \text{V. T. 43, N. 13.}$
- 9) $\int \operatorname{Arctg} \frac{p}{x} \frac{T_y x}{q^2 \cos^2 x + r^2 \sin^2 x} \, dx = \frac{\pi}{2 r^2} l \left(1 + \frac{r}{q} \frac{e^p - e^{-p}}{e^p + e^{-p}} \right) \quad (\text{VIII, 420}).$
- 10) $\int \operatorname{Arctg} \frac{r}{x} \frac{\sin p x}{1 \pm 2 q \cos p x + q^2} \, dx = \pm \frac{\pi}{2 p q} l \frac{1 \pm q}{1 \pm q e^{-p r}} [q^2 < 1] = \pm \frac{\pi}{2 p q} l \frac{q \pm 1}{q \pm e^{-p r}} [q^2 > 1] \quad (\text{VIII, 599}).$
- 11) $\int \operatorname{Arctg} \frac{r}{x} \frac{\sin p x}{(1 - 2 q \cos p x + q^2)^2} \, dx = \frac{\pi}{2 p (1+q)(1-q)^2} \frac{1 - e^{-p r}}{1 - q e^{-p r}} [q^2 < 1] \quad (\text{VIII, 598}).$

F. Circul. Directe;
Circul. Inverso.

TABLE 348.

Lim. diverses.

- 1) $\int_0^{\frac{\pi}{4}} \operatorname{Arcsin}(T_y x) \frac{dx}{\sin 2x} = \frac{\pi}{4} l 2 \quad \text{V. T. 230, N. 1.}$
- 2) $\int_0^{\frac{\pi}{4}} \operatorname{Arctg} \left(\frac{p \sqrt{\cos 2x}}{\cos x} \right) \frac{dx}{\cos 2x} = \frac{\pi}{2} l \{ p + \sqrt{1+p^2} \} \quad \text{V. T. 245, N. 10.}$
- 3) $\int_{-\frac{\pi}{4}}^{\frac{\pi}{4}} \operatorname{Arctg}(p + q T_y x) \, dx = -\pi \frac{1}{2} \left\{ \operatorname{Arctg} \left(\frac{2 p q}{1 + p^2 - q^2} \right) - \operatorname{Arctg} \left(\frac{2 p}{1 - p^2 - q^2} \right) \right\} \quad \text{V. T. 254, N. 10.}$

F. Circul. Directe; } Intégr. Lim. (Lim. $k = \infty$) TABLE 349.
Circul. Inverse. }

Lim. diverses.

- 1) $\int_0^a \operatorname{Arctg} \left(\frac{p \sin x}{1 - p \cos x} \right) \frac{\cos k x}{\sin x} \, dx = 0 \quad [0 < a < \infty] \quad (\text{VIII, 379}).$

F. Circul. Directe;
Autre Fonction.

TABLE 350.

Lim. 0 et $\frac{\pi}{2}$

- 1) $\int F(p, x) \cdot \cot x \, dx = \frac{\pi}{4} F' \{ \sqrt{1-p^2} \} + \frac{1}{2} l p \cdot F'(p) \quad \text{Sylvester, Phil. Mag. 4th Ser., 20, 525.}$
- 2) $\int F(p, x) \frac{\sin x \cdot \cos x}{1 - p^2 \sin^2 x} \, dx = -\frac{1}{4 p^2} l (1 - p^2) \cdot F'(p) \quad (\text{VIII, 368}).$

- 3) $\int E(p, \sin x) \frac{\sin x}{1-p^2 \sin^2 x} dx = \frac{\pi}{2\sqrt{1-p^2}}$ (VIII, 478).
- 4) $\int E(p, x) \frac{\sin x \cdot \cos x}{1-p^2 \sin^2 x} dx = -\frac{1}{2p^2} \left[(p^2-2)F'(p) + \left\{ 2 + \frac{1}{2} \ell(1-p^2) \right\} E'(p) \right]$ (VIII, 368).
- 5) $\int F\{\sqrt{1-p^2}, x\} \frac{\sin x \cdot \cos x}{\cos^2 x + p \sin^2 x} dx = \frac{1}{4(1-p)} \ell \left\{ \frac{2}{(1+p)\sqrt{p}} \right\} \cdot F'\{\sqrt{1-p^2}\}$ (VIII, 369).
- 6) $\int F(p, x) \frac{\sin x \cdot \cos x}{1+p \sin^2 x} dx = \frac{1}{4p} F'(p) \cdot \ell \left\{ \frac{(1+p)\sqrt{p}}{2} \right\} + \frac{\pi}{16p} F'\{\sqrt{1-p^2}\}$ (VIII, 369).
- 7) $\int F(p, x) \frac{\sin x \cdot \cos x}{1-p \sin^2 x} dx = \frac{1}{4p} F'(p) \cdot \ell \left\{ \frac{2}{(1-p)\sqrt{p}} \right\} - \frac{\pi}{16p} F'\{\sqrt{1-p^2}\}$ (VIII, 369).
- 8) $\int F(p, x) \frac{\sin x \cdot \cos x}{1-p^2 \sin^4 x} dx = \frac{1}{8p} F'(p) \cdot \ell \frac{1+p}{1-p}$ (VIII, 369).
- 9) $\int F(p, x) \frac{\sin^3 x \cdot \cos x}{1-p^2 \sin^4 x} dx = \frac{1}{8p^2} F'(p) \cdot \ell \left\{ \frac{4}{(1-p^2)p} \right\} - \frac{\pi}{16p^2} F'\{\sqrt{1-p^2}\}$ (VIII, 369).
- 10) $\int E(p, x) \frac{dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{2} E'(p) \cdot F'(p) - \frac{1}{4} \ell(1-p^2)$ (IV, 482).
- 11) $\int F(p, x) \frac{dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{\pi}{12} F'\{\sqrt{1-p^2}\} + \frac{1}{6} E'(p) \cdot \{F'(p)\}^2 + \frac{1}{6} F'(p) \cdot \ell \left\{ \frac{p}{4(1-p^2)} \right\}$
(VIII, 267).
- 12) $\int F(p, x) \frac{\sin x \cdot \cos x}{1-p^2 \sin^2 \lambda \cdot \sin^2 x} \frac{dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{-1}{p^2 \sin \lambda \cdot \cos \lambda} \left\{ F'(p) \cdot \text{Arctg}\{Tg \lambda \cdot \sqrt{1-p^2}\} - \right.$
 $\left. - \frac{\pi}{2} F(p, \lambda) \right\}$ (VIII, 370).
- 13) $\int E(p, x) \frac{\sin x \cdot \cos x}{1-p^2 \sin^2 \lambda \cdot \sin^2 x} \frac{dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{-1}{p^2 \sin \lambda \cdot \cos \lambda} \left\{ E'(p) \cdot \text{Arctg}\{Tg \lambda \cdot \sqrt{1-p^2}\} - \right.$
 $\left. - \frac{\pi}{2} E(p, \lambda) + \frac{\pi}{2} \text{Cot} \lambda \cdot \{1 - \sqrt{1-p^2 \sin^2 \lambda}\} \right\}$ (VIII, 370).

- 1) $\int_0^1 B'(x) \cdot \sin 2c\pi x dx = 0$ (IV, 483).
- 2) $\int_0^1 B''(x) \cdot \cos 2c\pi x dx = 0$ (IV, 483).
- 3) $\int_0^1 B'(x) \cdot \cos 2c\pi x dx = \frac{(-1)^a}{(2\pi)^{2a+2}} \frac{1^{2a+1/2}}{c^{2a+2}}$ (IV, 483).

$$4) \int_0^1 B'(x) \cdot \sin 2c\pi x dx = \frac{(-1)^{a-1}}{(2\pi)^{2a+1}} \frac{1^{2a+1}}{c^{2a+1}} \quad (\text{IV}, 483).$$

$$5) \int_0^\infty \left\{ \frac{1}{(p-xi)^a} - \frac{1}{(p+xi)^a} \right\} \sin qx dx = (-1)^a a i \pi e^{-pq} (1-e^q)^{a-1}$$

$$6) \int_0^\infty \left\{ \frac{1}{(p-xi)^a} + \frac{1}{(p+xi)^a} \right\} \cos qx dx = (-1)^{a-1} a \pi e^{-pq} (1-e^q)^{a-1}$$

Sur 5) et 6) voyez Raabe, Dsch. Zür. 8, 1.

$$7) \int_0^\pi T(p, x) \frac{dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{\pi}{6} F' \{ \sqrt{1-p^2} \} + \frac{4}{3} E'(p) \cdot \{ F'(p) \}^2 + \frac{1}{3} F'(p) \cdot \left\{ \frac{p}{4(1-p^2)} \right\} \quad (\text{VIII}, 267).$$

$$8) \int_0^{\text{Arcsin } p} E'(\sin x) \frac{Tg x}{\sqrt{p^2 - \sin^2 x}} dx = \frac{p\pi}{2\sqrt{1-p^2}} [p^2 < 1] \quad \text{V. T. 255, N. 11.}$$

$$9) \int_\lambda^\mu F(p, x) \frac{dx}{\sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{1}{2 \cos \lambda \cdot \sin \mu} F(p) \cdot F' \{ \sqrt{1 - Tg^2 \lambda \cdot Cot^2 \mu} \} [p < 1] \quad (\text{VIII}, 425).$$

$$10) \int_\lambda^\mu E(p, x) \frac{dx}{\sqrt{(\sin^2 x - \sin^2 \lambda)(\sin^2 \mu - \sin^2 x)}} = \frac{1}{2 \cos \lambda \cdot \sin \mu} E'(p) \cdot F' \left\{ \sqrt{1 - \frac{Tg^2 \lambda}{Tg^2 \mu}} \right\} + \frac{p^2 \sin \mu}{2 \cos \lambda} F' \left\{ \sqrt{1 - \frac{\sin^2 \lambda}{\sin^2 \mu}} \right\} [p < 1]$$

Dans 9) et 10) on a $p^2 = 1 - Cot^2 \lambda \cdot Cot^2 \mu$ (VIII, 427).

PARTIE QUATRIÈME

PARTIE QUATRIÈME.

F. Algébrique;

Exponentielle;

Logarithmique.

TABLE 352.

Lim. 0 et 1.

$$1) \int e^{-x} \log x \cdot (1-x) dx = \frac{1-e}{e} \text{ (VIII, 592).}$$

$$2) \int e^{qx} \log x \cdot (qx+2)x dx = \frac{1}{q^2} \{ (1-q)e^q - 1 \} \text{ V. T. 80, N. 1.}$$

$$3) \int e^{-x^2} \log x \cdot (1-x^2)x dx = \frac{1-e}{4e} \text{ (VIII, 592).}$$

$$4) \int e^{-(1-x)^2} \log(1-x) \cdot (2-x)(1-x)x dx = \frac{1-e}{4e} \text{ V. T. 352, N. 3.}$$

$$5) \int e^{x-1} \log(1-x) \cdot x dx = \frac{1-e}{e} \text{ (VIII, 592).}$$

$$6) \int e^x \log x \frac{x^2+x+2}{(x+1)^2} x dx = \frac{2-e}{2} \text{ V. T. 80, N. 6.}$$

$$7) \int x^{rx} \left(\log \frac{1}{x} \right)^{q-1} \cdot x^{p-1} dx = \Gamma(q) \sum_0^{\infty} \frac{r^n}{1^{n/1}} \frac{q^{n/1}}{(p+n)^{q+n}} \text{ (VIII, 515).}$$

$$8) \int \frac{x e^{qx}}{(e^{qx}-1)^{\frac{1}{2}} (e^q - e^{-qx})^{\frac{1}{2}}} \log \left(p \frac{e^q - e^{-qx}}{e^{qx} - 1} \right) dx = \frac{4\pi}{q} \left\{ \frac{1-(1+q)e^{\frac{1}{2}q}}{1-e^q} + \frac{1}{1+e^{\frac{1}{2}q}} \log p \right\} \text{ V. T. 33, N. 1.}$$

$$9) \int e^{rx} \frac{x^{p-1} - x^{q-1}}{\log x} dx = \log \frac{p}{q} + \sum_1^{\infty} \frac{r^n}{1^{n/1}} \log \frac{p+n}{q+n} \text{ (VIII, 491).}$$

- 1) $\int e^{-qx} l x \cdot x^{p-1} dx = \frac{1}{q^p} \Gamma(p) \cdot \{Z'(p) - lq\}$ (VIII, 363).
- 2) $\int e^{-qx} l x \cdot (qx - p) x^{p-1} dx = \frac{1}{q^p} \Gamma(p)$ V. T. 81, N. 1.
- 3) $\int e^{-x^q} l x \cdot (qx^q - p) x^{p-1} dx = \frac{1}{q} \Gamma\left(\frac{p}{q}\right)$ V. T. 81, N. 8.
- 4) $\int e^{-px^2} l x \cdot (px^2 - a) x^{2a-1} dx = \frac{1}{4p^a} 1^{a-1/1}$ V. T. 81, N. 7.
- 5) $\int e^{-px^2} l x \cdot (2px^2 - 2a - 1) x^{2a} dx = \frac{1}{2} \frac{1^{a/2}}{(2p)^a} \sqrt{\frac{\pi}{p}}$ V. T. 81, N. 6.
- 6) $\int e^{-px} l(q+x) \cdot x^a dx = \frac{1}{p^{a+1}} \left[1^{a/1} \{lq - e^{pq} Ei(-pq)\} + \{1 + pq e^{pq} Ei(-pq)\} \right. \\ \left. 2^{a-1/1} \sum_0^{a-1} 2^{n/1} (-pq)^n + 3^{a-2/1} \sum_0^{a-2} \frac{(pq)^n}{3^{n/1}} \sum_0^n \frac{1^{m+1/1}}{(-pq)^m} \right]$ (IV, 488).
- 7) $\int e^{-px} l(q-x)^2 \cdot x^a dx = \frac{1}{p^{a+1}} \left[1^{a/1} \{lq^2 - 2e^{-pq} Ei(pq)\} + 2\{1 - pq e^{-pq} Ei(pq)\} \right. \\ \left. 2^{a-1/1} \sum_0^{a-1} 2^{n/1} (pq)^n + 2 \cdot 3^{a-2/1} \sum_0^{a-2} \frac{(-pq)^n}{3^{n/1}} \sum_0^n \frac{1^{m+1/1}}{(pq)^m} \right]$ (IV, 488).
- 8) $\int e^{-px} l(q^2+x^2) \cdot x^{2a} dx = \frac{1}{p^{2a+1}} \left[1^{2a/1} lq^2 - 1^{2a/1} \{2Ci(pq) \cdot Cospq + 2Si(pq) \cdot Sinpq - \right. \\ \left. - \pi Sinpq\} \sum_0^a \frac{(-p^2q^2)^n}{1^{2n/1}} + 1^{2a/1} \{2Ci(pq) \cdot Sinpq - 2Si(pq) \cdot Cospq + \pi Cospq\} \sum_0^a \frac{(pq)^{2n-1}}{1^{2n-1/1}} + \right. \\ \left. + 2^{2a-1/1} \sum_1^a \frac{1}{1^{2n/1}} \sum_0^{n-1} 1^{2n-2m/1} (-p^2q^2)^m + 3^{2a-2/1} \sum_1^a \frac{1}{1^{2n-1/1}} \sum_0^{n-1} 1^{2n-2m-1/1} (-p^2q^2)^m \right]$ (IV, 488).
- 9) $\int e^{-px} l(q^2+x^2) \cdot x^{2a+1} dx = \frac{1}{p^{2a+3}} \left[1^{2a+1/1} lq^2 - 1^{2a+1/1} \{2Ci(pq) \cdot Cospq + 2Si(pq) \cdot Sinpq - \right. \\ \left. - \pi Sinpq\} \sum_0^a \frac{(-p^2q^2)^n}{1^{2n/1}} + 1^{2a+1/1} \{2Ci(pq) \cdot Sinpq - 2Si(pq) \cdot Cospq + \pi Cospq\} \sum_1^{a+1} \frac{(pq)^{2n-1}}{1^{2n-1/1}} + \right. \\ \left. + 2^{2a/1} \sum_1^{a+1} \frac{1}{1^{2n+1/1}} \sum_0^{n-1} 1^{2n-2m+1/1} (-p^2q^2)^m + 3^{2a-1/1} \sum_1^a \frac{1}{1^{2n/1}} \sum_0^{n-1} 1^{2n-2m/1} (-p^2q^2)^m \right]$ (IV, 488).
- 10) $\int e^{-px} l(q^2-x^2)^2 \cdot x^{2a} dx = \frac{2}{p^{2a+1}} \left[1^{2a/1} lq^2 - 1^{2a/1} e^{pq} Ei(-pq) \sum_0^{2a-1} \frac{(-pq)^n}{1^{n/1}} - \right. \\ \left. - 1^{2a/1} e^{-pq} Ei(pq) \sum_0^{2a-1} \frac{(pq)^n}{1^{n/1}} + 2^{2a-1/1} \sum_1^a \frac{1}{1^{2n/1}} \sum_0^{n-1} 1^{2n-2m/1} (p^2q^2)^m + \right. \\ \left. + 3^{2a-2/1} \sum_0^a \frac{1}{1^{2n-1/1}} \sum_0^{n-1} 1^{2n-2m-1/1} (p^2q^2)^m \right]$ V. T. 353, N. 6, 7.

$$11) \int e^{-px} l(q^2 - x^2)^2 \cdot x^{2n+1} dx = \frac{2}{p^{2n+3}} \left[1^{2n+1/2} lq^2 - 1^{2n+1/2} e^{-pq} Ei(-pq) \sum_0^{2n} \frac{(-pq)^n}{1^{n/2}} - \right. \\ \left. - 1^{2n+1/2} e^{-pq} Ei(pq) \sum_0^{2n} \frac{(pq)^n}{1^{n/2}} + 2^{2n+1} \sum_1^{n-1} \frac{1}{1^{2n+1/2}} \sum_0^{n-1} 1^{2n-2m+1/2} (p^2 q^2)^m + \right. \\ \left. + 3^{2n-1/2} \sum_1^n \frac{1}{1^{2n/2}} \sum_0^{n-1} 1^{2n-2m/2} (p^2 q^2)^m \right] \text{ V. T. 353, N. 6, 7.}$$

$$12) \int e^{-px} l(q^2 - x^2)^2 \cdot x dx = 8 + 4 lq^2 + 2(pq - 1) e^{-pq} Ei(-pq) + 2(pq + 1) e^{-pq} Ei(pq) - \\ - 2pq \{ 2 Ci(pq) \cdot Sin pq - 2 Si(pq) \cdot Cos pq + \pi Cos pq \} - 2 \{ 2 Ci(pq) \cdot Cos pq + \\ + 2 Si(pq) \cdot Sin pq - \pi Sin pq \} \text{ V. T. 353, N. 9, 11.}$$

$$13) \int e^{-px} l(q^2 - x^2)^2 \cdot x^2 dx = 24 + 8 lq^2 - 2(p^2 q^2 - 2pq + 2) e^{-pq} Ei(-pq) - 2(p^2 q^2 + 2pq + 2) \\ e^{-pq} Ei(pq) - 4pq \{ 2 Ci(pq) \cdot Sin pq - 2 Si(pq) \cdot Cos pq + \pi Cos pq \} + \\ + 2(p^2 q^2 - 2) \{ 2 Ci(pq) \cdot Cos pq + 2 Si(pq) \cdot Sin pq - \pi Sin pq \} \text{ V. T. 353, N. 8, 10.}$$

$$14) \int e^{-px} l(q^2 - x^2)^2 \cdot x^3 dx = 88 + 24 lq^2 + 2(p^2 q^2 - 3p^2 q^2 + 6pq - 6) e^{-pq} Ei(-pq) - \\ - 2(p^2 q^2 + 3p^2 q^2 + 6pq + 6) e^{-pq} Ei(pq) + 2(p^2 q^2 - 6)pq \{ 2 Ci(pq) \cdot Sin pq - \\ - 2 Si(pq) \cdot Cos pq + \pi Cos pq \} + 2(p^2 q^2 - 6) \{ 2 Ci(pq) \cdot Cos pq + 2 Si(pq) \cdot Sin pq - \\ - \pi Sin pq \} \text{ V. T. 353, N. 9, 11.}$$

$$1) \int \frac{dx}{x} l \left\{ \frac{s + r e^{-qx}}{s + r e^{-px}} \right\} = l \left\{ \frac{s}{s + r} \right\} \cdot l \frac{q}{p} \text{ (VIII, 280).}$$

$$2) \int l(1+x^2) \cdot e^{-px} \frac{dx}{x} = \{ Ci(p) \}^2 + \left\{ \frac{\pi}{2} - Si(p) \right\}^2 \text{ Enneper, Schl. Z. 6, 405.}$$

$$3) \int e^{-q^2 x^2 - \frac{p^2}{x^2}} l x \frac{2q^2 x^4 + x^2 - 2p^2}{x^4} dx = \frac{1}{2p} e^{-2pq} \sqrt{\pi} \text{ V. T. 89, N. 1.}$$

$$4) \int e^{-px} l(q+x) \frac{p(x+q) l(q+x) - 2}{x+q} dx = (lq)^2 \text{ (IV, 489).}$$

$$5) \int e^{-px} l(q-x) \frac{p(x-q) l(q-x) - 4}{x-q} dx = (lq^2)^2 \text{ (IV, 489).}$$

F. Alg. fract. à dén. mon. et bin.;

Expon. monôme;

TABLE 354, suite.

Lim. 0 et ∞ .

Logarithmique.

$$6) \int l(1 - e^{-2\pi x}) \frac{dx}{1+x^2} = -\pi \left\{ \frac{1}{2} l 2q\pi - l\Gamma(q+1) + q(lq-1) \right\} \text{ (IV, 489).}$$

$$7) \int l(1 + e^{-2\pi x}) \frac{dx}{1+x^2} = \pi \left\{ l\Gamma(2q) - l\Gamma(q) + q(1-lq) - \left(2q - \frac{1}{2}\right) l 2 \right\}$$

Winckler, Sitz. Ber. Wien. 48, 315.

$$8) \int e^{-px} l(q^2 + x^2) \frac{p(x^2 + q^2) l(q^2 + x^2) - 4}{x^2 + q^2} dx = (lq^2)^2 \text{ (IV, 489).}$$

$$9) \int e^{-px} l(q^2 - x^2) \frac{p(x^2 - q^2) l(q^2 - x^2) - 8}{x^2 - q^2} dx = (lq^2)^2 \text{ (IV, 489).}$$

$$10) \int l \left\{ \frac{(x+p)(x+q)}{pq} \right\} \frac{e^{-x}}{x+p+q} dx = e^{p+q} li(e^{-p}) \cdot li(e^{-q})$$

$$11) \int l \left\{ (x+p)(x+q) \right\} \frac{e^{-rx}}{x+p+q} dx = e^{(p+q)r} [li(e^{-pr}) \cdot li(e^{-qr}) - lpq \cdot li \{ e^{-(p+q)r} \}]$$

$$12) \int l(x+p+q) \cdot e^{-rx} \left(\frac{1}{x+p} + \frac{1}{x+q} \right) dx = (1+lp \cdot lq) \cdot l(p+q) + e^{-(p+q)r} \{ li(e^{-pr}) \cdot li(e^{-qr}) + (1-lpq) \cdot li(e^{-(p+q)r}) \}$$

Sur 9) à 11) voyez Winckler, Cr. 50, 1.

$$13) \int \left\{ e^{-x} - \frac{x(1+x)^{-p}}{l(1+x)} \right\} \frac{dx}{x} = l(p-1) \text{ (IV, 490).}$$

$$14) \int \left\{ \frac{e^{-x}}{x} - \frac{1}{(1+x)^2 l(1+x)} \right\} dx = 0 \text{ (VIII, 586).}$$

$$15) \int \left\{ e^{-x} - \frac{x}{(1+x)^{p+1} l(1+x)} \right\} \frac{dx}{x} = lp \text{ Winckler, Sitz. Ber. Wien. 21, 589.}$$

$$16) \int \left\{ (p-1)e^{-x} + \frac{(1+x)^{-p} - (1+x)^{-1}}{l(1+x)} \right\} \frac{dx}{x} = l\Gamma(p) \text{ (VIII, 586).}$$

F. Alg. fract. à dén. puiss. de bin.;

Expon. monôme;

TABLE 355.

Lim. 0 et ∞ .

Logarithmique.

$$1) \int e^{-px} l(q+x) \frac{px+pq+1}{(x+q)^2} dx = p e^{pq} Ei(-pq) + \frac{1}{q} (1+lq) \text{ V. T. 355, N. 14.}$$

$$2) \int e^{-px} l(q-x) \frac{px-pq+1}{(x-q)^2} dx = 2p e^{-pq} Ei(pq) - \frac{1}{q} (2+lq^2) \text{ V. T. 355, N. 15.}$$

$$3) \int e^{-px} l(q+x) \frac{px-pq+1}{(x-q)^2} dx = \frac{1}{2q} \{e^{pq} Ei(-pq) - e^{-pq} Ei(pq) - lq^2\} \text{ (IV, 490).}$$

$$4) \int e^{-px} l(q-x) \frac{px+pq+1}{(x+q)^2} dx = \frac{1}{q} \{e^{pq} Ei(-pq) - e^{-pq} Ei(pq) + lq^2\} \text{ (IV, 490).}$$

$$5) \int e^{-px} l(q^2-x^2) \frac{px+pq+1}{(x+q)^2} dx = \frac{1}{q} \{(2pq+1)e^{pq} Ei(-pq) - e^{-pq} Ei(pq) + 2lq^2 + 2\}$$

V. T. 355, N. 1, 4.

$$6) \int e^{-px} l(q^2-x^2) \frac{px-pq+1}{(x-q)^2} dx = \frac{1}{q} \{e^{pq} Ei(-pq) + (2pq-1)e^{-pq} Ei(pq) - 2lq^2 - 2\}$$

V. T. 355, N. 2, 3.

$$7) \int e^{-px} l(q+x) \frac{px^2-(pq+2a-1)x+2aq}{(x-q)^2} x^{2a-1} dx = \frac{1}{2} q^{2a-1} \{e^{pq} Ei(-pq) - e^{-pq} Ei(pq)\} + \\ + \frac{1}{p^{2a-1}} \sum_1^a l^{2a-2n+1} (p^2 q^2)^{n-1} \text{ (IV, 491).}$$

$$8) \int e^{-px} l(q+x) \frac{px^2-(pq+2a)x+(2a+1)q}{(x-q)^2} x^{2a} dx = -\frac{1}{2} q^{2a} \{e^{pq} Ei(-pq) + e^{-pq} Ei(pq)\} + \\ + \frac{1}{p^{2a}} \sum_1^a l^{2a-2n+1} (p^2 q^2)^{n-1} \text{ (IV, 491).}$$

$$9) \int e^{-px} l(q-x) \frac{px^2+(pq-2a+1)x-2aq}{(x+q)^2} x^{2a-1} dx = q^{2a-1} \{e^{pq} Ei(-pq) - e^{-pq} Ei(pq)\} + \\ + \frac{2}{p^{2a-1}} \sum_1^a l^{2a-2n+1} (p^2 q^2)^{n-1} \text{ (IV, 491).}$$

$$10) \int e^{-px} l(q-x) \frac{px^2+(pq-2a)x-(2a+1)q}{(x+q)^2} x^{2a} dx = -q^{2a} \{e^{pq} Ei(-pq) + e^{-pq} Ei(pq)\} + \\ + \frac{2}{p^{2a}} \sum_1^a l^{2a-2n+1} (p^2 q^2)^{n-1} \text{ (IV, 491).}$$

$$11) \int e^{-px} l(q+x) \frac{px^2+2x-pq^2}{(x^2-q^2)^2} dx = \frac{1}{4q^2} \{2-4lq^2-(2pq-1)e^{pq} Ei(-pq) - e^{-pq} Ei(pq)\}$$

V. T. 355, N. 1, 3.

$$12) \int e^{-px} l(q-x) \frac{px^2+2x-pq^2}{(x^2-q^2)^2} dx = \frac{1}{2q^2} \{2-4lq^2-e^{pq} Ei(-pq) + (2pq+1)e^{-pq} Ei(pq)\}$$

V. T. 355, N. 2, 4.

$$13) \int e^{-px} l(q^2-x^2) \frac{px^2+2x-pq^2}{(x^2-q^2)^2} dx = \frac{1}{q^2} \{2-4lq^2-pq e^{pq} Ei(-pq) + pq e^{-pq} Ei(pq)\}$$

V. T. 355, N. 11, 12.

F. Alg. fract. à dén. puiss. de bin.;

Expon. monôme;

TABLE 355, suite.

Lim. 0 et ∞ .

Logarithmique.

$$14) \int e^{-px} \ln(q+x) \frac{px+pq+a-1}{(x+q)^a} dx = \frac{\ln q}{q^{a-1}} + \frac{(-p)^a}{1^{a-1/1} p} e^{-pq} Ei(-pq) + \frac{1}{1^{a-1/1} q^{a-1}} \\ \sum_1^{a-1} 1^{a-n-1/1} (-pq)^{n-1} \quad (\text{IV, 490}).$$

$$15) \int e^{-px} \ln(q-x) \frac{px-pq+a-1}{(x-q)^a} dx = (-1)^{a-1} \left\{ \frac{1}{q^{a-1}} \ln q - 2 \frac{p^{a-1}}{1^{a-1/1}} e^{-pq} Ei(pq) + \right. \\ \left. + \frac{2}{1^{a-1/1} q^{a-1}} \sum_1^{a-1} 1^{a-n-1/1} (pq)^{n-1} \right\} \quad (\text{IV, 490}).$$

F. Algèbr. rat.;

Expon. en dén. polynôme;

TABLE 356.

Lim. 0 et ∞ .

Logarithmique.

$$1) \int \ln x \frac{(px-q)e^{qx}-q}{(e^{qx}+1)^2} x^{q-1} dx = \frac{1}{p^q} \Gamma(q) \sum_0^{\infty} \frac{(-1)^n}{(n+1)^q} \quad \text{V. T. 83, N. 6.}$$

$$2) \int \ln x \frac{(2qx-2a-1)e^{qx}-(2qx+2a+1)e^{-qx}}{(e^{qx}+e^{-qx})^2} x^{2a} dx = \frac{2^{2a-1}-1}{(2q)^{2a+1}} \pi^{2a} B_{2a-1}$$

V. T. 86, N. 2.

$$3) \int \ln x \frac{(qx-p)(1+e^x)+xe^x}{(1+e^x)^2} e^{-qx} x^{p-1} dx = \Gamma(p) \sum_1^{\infty} \frac{(-1)^{n-1}}{(q+n)^p} \quad \text{V. T. 83, N. 9.}$$

$$4) \int \ln x \frac{(qx-2a)e^{qx}-2a}{(e^{qx}+1)^2} x^{2a-1} dx = \frac{2^{2a-1}-1}{2a} B_{2a-1} \left(\frac{\pi}{q}\right)^{2a} \quad \text{V. T. 83, N. 2.}$$

$$5) \int \ln x \frac{(px-q)e^{px}+q}{(e^{px}-1)^2} x^{q-1} dx = \frac{1}{p^q} \Gamma(q) \sum_0^{\infty} \frac{1}{(n+1)^q} \quad \text{V. T. 83, N. 7.}$$

$$6) \int \ln x \frac{(2qx-2a-1)e^{qx}+(2qx+2a+1)e^{-qx}}{(e^{qx}-e^{-qx})^2} x^{2a} dx = \frac{1}{4q^{2a+1}} \pi^{2a} B_{2a-1} \quad \text{V. T. 86, N. 5.}$$

$$7) \int \ln x \frac{(qx-p)(e^x-1)+xe^x}{(e^x-1)^2} e^{-qx} x^{p-1} dx = \Gamma(p) \sum_1^{\infty} \frac{1}{(q+n)^p} \quad \text{V. T. 83, N. 10.}$$

$$8) \int \ln x \frac{qx e^{qx}-2a(e^{qx}-1)}{(e^{qx}-1)^2} x^{2a-1} dx = \frac{1}{a} 2^{2a-2} B_{2a-1} \left(\frac{\pi}{q}\right)^{2a} \quad \text{V. T. 83, N. 4.}$$

$$9) \int \ln x \frac{a e^{2qx}-q x e^{qx}-a}{(e^{qx}-1)^2} x^{2a-1} dx = -\frac{1}{a} 2^{2a-1} \left(\frac{\pi}{q}\right)^{2a} B_{2a-1} \quad \text{V. T. 83, N. 11.}$$

$$10) \int \ln x \frac{(q+1)(e^x+e^{-x})-x(e^x-e^{-x})}{(e^x+e^{-x})^2} x^q dx = \Gamma(q+1) \sum_0^{\infty} \frac{(-1)^{n+1}}{(2n+1)^{q+1}} \quad \text{V. T. 84, N. 11.}$$

$$11) \int \log x \frac{(2a+1)(e^{qx} + e^{-qx}) - qx(e^{qx} - e^{-qx})}{(e^{qx} + e^{-qx})^2} x^{2a} dx = -\frac{1}{2} \left(\frac{\pi}{2q}\right)^{2a+1} B_{2a} \text{ V. T. 84, N. 12.}$$

$$12) \int \log(1+x^2) \frac{e^{\pi x}(1+\pi x) + e^{-\pi x}(1-\pi x)}{(e^{\pi x} + e^{-\pi x})^2} \frac{dx}{x^2} = 2 - \frac{1}{2}\pi \text{ V. T. 97, N. 1.}$$

$$13) \int \log(1+4x^2) \frac{e^{\pi x}(1+\pi x) + e^{-\pi x}(1-\pi x)}{(e^{\pi x} + e^{-\pi x})^2} \frac{dx}{x^2} = 2 \log 2 \text{ V. T. 97, N. 2.}$$

$$14) \int \log x \frac{(qx-2a-1)e^{qx} + (qx+2a+1)e^{-qx}}{(e^{qx} - e^{-qx})^2} x^{2a} dx = \frac{2^{2a+1}-1}{(2q)^{2a+1}} 1^{2a+1} \sum_1^{\infty} \frac{1}{n^{2a+1}} \\ \text{V. T. 84, N. 13.}$$

$$15) \int \log x \frac{(qx-2a)e^{qx} + (qx+2a)e^{-qx}}{(e^{qx} - e^{-qx})^2} x^{2a-1} dx = \frac{2^{2a}-1}{4a} B_{2a-1} \left(\frac{\pi}{q}\right)^{2a} \text{ V. T. 84, N. 14.}$$

$$16) \int \log x \frac{x(e^x - e^{-x}) - 3(e^{\frac{1}{2}x} - e^{-\frac{1}{2}x})^2 - 12 \cos^2 \frac{1}{2}\lambda}{(e^x + e^{-x} + 2 \cos \lambda)^2} x^2 dx = \frac{\lambda}{2 \sin \lambda} \frac{\pi^2 - \lambda^2}{3} \text{ V. T. 88, N. 3.}$$

$$17) \int \log x \frac{q(e^x + e^{-x} + 2 \cos \lambda) - x(e^x - e^{-x})}{(e^x + e^{-x} + 2 \cos \lambda)^2} x^{q-1} dx = \frac{\Gamma(q)}{\sin \lambda} \sum_1^{\infty} (-1)^n \frac{\sin n \lambda}{n^q} \text{ V. T. 96, N. 4.}$$

$$18) \int \log x \frac{x(e^x - e^{-x}) - 2(e^{\frac{1}{2}x} - e^{-\frac{1}{2}x})^2}{(e^x + e^{-x} - 1)^2} x dx = \frac{4}{27} \pi^2 \text{ V. T. 88, N. 1.}$$

$$19) \int \log x \frac{(x-2)e^{2x} + 2}{\sqrt{e^{2x} - 1}} x dx = \frac{\pi}{2} \log 2 \text{ V. T. 99, N. 4.}$$

$$20) \int \log x \frac{2(x-1)e^x + (2-x)e^{-x}}{\sqrt{e^{2x} - 1}} x dx = 1 - \log 2 \text{ V. T. 99, N. 8.}$$

$$21) \int \frac{e^{px} + e^{-px}}{e^{qx} + e^{-qx}} \frac{\log x}{x^q} dx = Z'(1-q) \cdot \Gamma(1-q) \sum_0^{\infty} (-1)^n \left\{ \frac{1}{\{(2n+1)\pi-p\}^{1-q}} + \frac{1}{\{(2n+1)\pi+p\}^{1-q}} \right\} - \\ - \Gamma(1-q) \sum_0^{\infty} (-1)^n \left\{ \frac{\log \{(2n+1)\pi-p\}}{\{(2n+1)\pi-p\}^{1-q}} + \frac{\log \{(2n+1)\pi+p\}}{\{(2n+1)\pi+p\}^{1-q}} \right\} \text{ (VIII, 567).}$$

$$22) \int \frac{e^{px} - e^{-px}}{e^{qx} - e^{-qx}} \frac{\log x}{x^q} dx = Z'(1-q) \cdot \Gamma(1-q) \sum_0^{\infty} \left\{ \frac{1}{\{(2n+1)\pi-p\}^{1-q}} - \frac{1}{\{(2n+1)\pi+p\}^{1-q}} \right\} - \\ - \Gamma(1-q) \sum_0^{\infty} \left\{ \frac{\log \{(2n+1)\pi-p\}}{\{(2n+1)\pi-p\}^{1-q}} - \frac{\log \{(2n+1)\pi+p\}}{\{(2n+1)\pi+p\}^{1-q}} \right\} \text{ (VIII, 567).}$$

- 1) $\int e^{-qx} \ln x \cdot dx \sqrt{x} = \frac{1}{2q} (2 - \ln q - 2 \ln 2 - A) \sqrt{\frac{\pi}{q}}$ (VIII, 363).
- 2) $\int e^{-qx} \left(qx - a - \frac{1}{2} \right) \ln x x^{a-\frac{1}{2}} dx = \frac{1^{a/2}}{(2q)^a} \sqrt{\frac{\pi}{q}}$ V. T. 98, N. 2.
- 3) $\int e^{-qx} \ln x x dx = \frac{1}{4q} (10 - 3 \ln q - 6 \ln 2 - A) \sqrt{\frac{\pi}{q}}$ V. T. 357, N. 1, 2.
- 4) $\int e^{-(px+\frac{q}{x})} \ln x \cdot \{2px^2 - (2c+1)x - 2q\} x^{c-\frac{1}{2}} dx = 2 \left(\frac{q}{p}\right)^{\frac{1}{2}c} e^{-2\sqrt{pq}} \sqrt{\frac{\pi}{p}} \cdot \sum_{n=0}^{\infty} \frac{(c-n+1)^{2n/2}}{2^{n/2} (2\sqrt{pq})^n}$
V. T. 98, N. 5.
- 5) $\int e^{-qx} \ln x \frac{dx}{\sqrt{x}} = -(\ln q + 2 \ln 2 + A) \sqrt{\frac{\pi}{q}}$ (VIII, 363).
- 6) $\int e^{-q^2 x - \frac{p^2}{x}} \ln x \frac{2q^2 x^2 - 3x - 2p^2}{\sqrt{x}} dx = \frac{1+2pq}{2q^2} e^{-2\sqrt{pq}} \sqrt{\pi}$ V. T. 98, N. 4.
- 7) $\int e^{-q^2 x - \frac{p^2}{x}} \ln x \frac{2q^2 x^2 - x - 2p^2}{x \sqrt{x}} dx = \frac{2}{q} e^{-2\sqrt{pq}} \sqrt{\pi}$ V. T. 98, N. 15.
- 8) $\int e^{-\frac{1+x^2}{qx}} \ln x \frac{1+qx-x^2}{x \sqrt{x}} dx = -\frac{\sqrt{2q\pi}}{\sqrt{e}} 2q$ V. T. 98, N. 12.
- 9) $\int e^{-\frac{1+x^2}{qx}} \ln x \frac{x^2+qx-1}{x^2 \sqrt{x}} dx = \frac{2q}{\sqrt{e}} \sqrt{2q\pi}$ V. T. 98, N. 13.
- 10) $\int e^{-\frac{1+x^2}{qx}} \ln x \frac{x^2+3qx-1}{x^3 \sqrt{x}} dx = \frac{1+q}{\sqrt{e}} 2q \sqrt{2q\pi}$ V. T. 98, N. 14.
- 11) $\int e^{-px-\frac{q}{x}} \ln x \frac{2px^2+(2a-1)x-2q}{x^{a+\frac{1}{2}}} dx = 2 \left(\frac{p}{q}\right)^{\frac{1}{2}a} e^{-2\sqrt{pq}} \sqrt{\frac{\pi}{q}} \cdot \sum_{n=0}^{\infty} \frac{(a-n)^{2n/2}}{2^{n/2} (2\sqrt{pq})^n}$
V. T. 98, N. 17.
- 12) $\int \frac{\ln x}{e^x + e^{-x}} \frac{dx}{\sqrt{x}} = \sqrt{\pi} \cdot \sum_{n=0}^{\infty} (-1)^{n+1} \frac{\ln(2n+1) + 2 \ln 2 + A}{\sqrt{2n+1}}$ (VIII, 487).
- 13) $\int \frac{\ln x}{e^x + 1 + e^{-x}} \frac{dx}{\sqrt{x}} = \operatorname{Cosec} \frac{\pi}{3} \cdot \sqrt{\pi} \cdot \sum_{n=1}^{\infty} \left\{ (-1)^n \sin \frac{1}{3} n \pi \cdot \frac{\ln n + 2 \ln 2 + A}{\sqrt{n}} \right\}$ (VIII, 487).
- 14) $\int \ln x \frac{(2x-1)e^x - (2x+1)e^{-x}}{(e^x + e^{-x})^2} \frac{dx}{\sqrt{x}} = 2 \sqrt{\pi} \cdot \sum_{n=0}^{\infty} \frac{(-1)^n}{\sqrt{2n+1}}$ V. T. 98, N. 8.
- 15) $\int \ln x \frac{(2x-1)e^x - (2x+1)e^{-x} - 1}{(e^x + 1 + e^{-x})^2} \frac{dx}{\sqrt{x}} = 2 \operatorname{Cosec} \frac{\pi}{3} \cdot \sqrt{\pi} \cdot \sum_{n=1}^{\infty} (-1)^{n-1} \frac{\sin \frac{1}{3} n \pi}{\sqrt{n}}$ V. T. 98, N. 9.

$$1) \int e^{-px^2+qx} \log x \cdot (px^2 - qx - 1) x dx = \frac{q}{2p} e^{\frac{q^2}{p}} \sqrt{\frac{\pi}{p}} \text{ V. T. 100, N. 7.}$$

$$2) \int \log(e^{px} + e^{-px}) \cdot x dx = 0 \text{ (VIII, 273).}$$

$$3) \int \frac{1 - e^{px}}{\log(q - xi)} \frac{dx}{x} = \frac{2\pi i}{1 - q} \{1 - e^{p(q-1)}\} [q < 1], = 0 [q > 1], = \pi p i [q = 1] \text{ (VIII, 674).}$$

$$4) \int (-xi)^{p-1} e^{qx} \frac{\log\left(1 + \frac{si}{x}\right)}{\log\left(1 + \frac{ri}{x}\right)} dx = 2\pi (1-s)^{p-1} e^{q(r-s)} \log \frac{1-r}{1-r+s} [r < 1]$$

$$5) \int \frac{e^{px} - e^{qx}}{xi} \frac{dx}{\log(1 - xi)} = \pi(q - p)$$

$$6) \int \frac{e^{px} - e^{qx}}{xi} \frac{dx}{\log(r - xi)} = \frac{2\pi}{1-r} \{e^{p(r-1)} - e^{q(r-1)}\} [r < 1], = 0 [r > 1]$$

Sur 4) à 6) voyez Cauchy, Ann. Math. 17, 84.

$$7) \int e^{sx} (-xi)^{q-1} \log\left(1 + \frac{ri}{x}\right) \frac{dx}{p - xi} = 0 \text{ (IV, 495).}$$

$$8) \int e^{sx} (-xi)^{q-1} \log\left(1 + \frac{ri}{x}\right) \frac{dx}{p + xi} = 2\pi p^{q-1} e^{-ps} \log\left(1 + \frac{r}{p}\right) \text{ (IV, 495).}$$

$$9) \int e^{px} \log(q + xi) \frac{dx}{(q + xi)^a} = \frac{2\pi}{1-a} p^{a-1} e^{-pq} \{Z'(a) - \log p\} \text{ (IV, 495).}$$

$$10) \int e^{px} \log(q - xi) \frac{dx}{(q - xi)^a} = 0 \text{ (IV, 495).}$$

$$11) \int \frac{e^{-px}}{\log(1 + xi)} \frac{dx}{r^2 + x^2} = \frac{\pi e^{-pr}}{r \log(1 + r)} - \frac{\pi}{r^2} \text{ (IV, 495).}$$

$$12) \int \frac{e^{-px}}{\log(1 + xi)} (xi)^q \frac{dx}{r^2 + x^2} = \frac{\pi r^{q-1} e^{-pr}}{\log(1 + r)} \text{ (IV, 495).}$$

$$13) \int \frac{e^{qx}}{\log(1 - pxi)} (-xi) \frac{dx}{1 + x^2} = \frac{\pi e^{-q}}{\log(1 + p)} \text{ (IV, 495).}$$

$$14) \int \frac{e^{-ax}}{\{\log(k + xi)\}^n} \frac{1}{(f + xi)^p (g + xi)^q \dots} \frac{dx}{b^2 + x^2} = \frac{\pi}{b} e^{-ab} \frac{1}{(b+f)^p (b+g)^q \dots} \frac{1}{\{\log(b+k)\}^n} \text{ (VIII, 610).}$$

F. Algébrique;
Exponentielle;
Logarithmique.

TABLE 358, suite.

Lim. — ∞ et ∞ .

$$15) \int \frac{e^{-ax}}{\{l(k+x)\}^m \{l(b+x)\}^n \dots} \frac{1}{(f+x)^p (g+x)^q \dots} \frac{dx}{b^2+x^2} = \frac{\pi}{b} e^{-ab} \frac{1}{(b+f)^p (b+g)^q \dots} \frac{1}{\{l(b+k)\}^m \{l(b+k)\}^n \dots} \quad (\text{VIII, 610}).$$

F. Algébrique;
Exponentielle;
Logarithmique.

TABLE 359.

Lim. 1 et ∞ .

$$1) \int e^{-qx} l(2x-1) \frac{dx}{x} = \frac{1}{2} \{li(e^{-q})\}^2 \quad (\text{IV, 496}).$$

$$2) \int \frac{e^{-qx} l x}{2x-1} \{q(2x-1) l(2x-1) - 1\} dx = \frac{1}{4} \{li(e^{-q})\}^2 \quad \text{V. T. 359, N. 1.}$$

$$3) \int_0^{\frac{p^2}{q^2}} l \left\{ \frac{p^2 - q^2 e^x}{e^x - 1} \right\} \frac{x e^{-x}}{\sqrt{\frac{p^2 - q^2 e^x}{e^x - 1}}} \frac{dx}{(1 - e^{-x})^2} = -\frac{4\pi}{p+q} + \frac{4\pi}{p^2 - q^2} l \frac{p^2}{q^2} \quad \text{V. T. 33, N. 1.}$$

F. Algébrique;
Exponentielle;
Logarithmique.

Intégr. Lim. (Lim. $k = \infty$) TABLE 360.

Lim. 0 et ∞ .

$$1) \int \frac{e^{-kx} l x}{e^x + e^{-x}} \frac{dx}{\sqrt{x}} = 0 \quad (\text{VIII, 317}).$$

$$2) \int \frac{e^{-kx} l x}{e^x + e^{-x} + 1} \frac{dx}{\sqrt{x}} = 0 \quad (\text{VIII, 317}).$$

F. Algèbr. rat. ent.;
Expon. $e^{\pm ax}$;
Circul. Dir.

TABLE 361.

Lim. 0 et ∞ .

$$1) \int e^{-px} \sin qx \cdot x dx = \frac{2pq}{(p^2 + q^2)^2} \quad (\text{VIII, 567}).$$

$$2) \int e^{-px} \sin qx \cdot x^2 dx = 2 \frac{3p^3 q - q^3}{(p^2 + q^2)^3} \quad (\text{IV, 497}).$$

$$3) \int e^{-px} \sin qx \cdot x^3 dx = 6 pq \frac{p^2 - q^2}{(p^2 + q^2)^4} \quad (\text{IV, 497}).$$

$$4) \int e^{-px} \sin qx \cdot x^4 dx = 24 \frac{5p^4 q - 10p^2 q^3 + q^5}{(p^2 + q^2)^5} \quad (\text{IV, 497}).$$

- $$5) \int e^{-px} \cos qx \cdot x dx = \frac{p^2 - q^2}{(p^2 + q^2)^2} \text{ (VIII, 567).}$$
- $$6) \int e^{-px} \cos qx \cdot x^2 dx = 2 \frac{p^3 - 3pq^2}{(p^2 + q^2)^3} \text{ (IV, 497).}$$
- $$7) \int e^{-px} \cos qx \cdot x^3 dx = 6 \frac{p^4 - 6p^2q^2 + q^4}{(p^2 + q^2)^4} \text{ (IV, 497).}$$
- $$8) \int e^{-px} \cos qx \cdot x^4 dx = 24p \frac{p^5 - 10p^3q^2 + 5q^4}{(p^2 + q^2)^5} \text{ (IV, 498).}$$
- $$9) \int e^{-px} \sin qx \cdot x^{r-1} dx = \frac{\Gamma(r)}{(p^2 + q^2)^{r/2}} \sin\left(r \operatorname{Arctg} \frac{q}{p}\right) \text{ (VIII, 440).}$$
- $$10) \int e^{-px} \cos qx \cdot x^{r-1} dx = \frac{\Gamma(r)}{(p^2 + q^2)^{r/2}} \cos\left(r \operatorname{Arctg} \frac{q}{p}\right) \text{ (VIII, 440).}$$
- $$11) \int e^{qx \cos \lambda} \sin(qx \sin \lambda) \cdot \sin\left(\frac{1}{2}p\pi - x\right) \cdot x^{p-1} dx = \Gamma(p) \sum_1^{\infty} (-1)^n \left(\frac{-p}{2n-1}\right) q^{2n-1} \sin\{(2n-1)\lambda\} \text{ (VIII, 491).}$$
- $$12) \int e^{qx \cos \lambda} \sin(qx \sin \lambda) \cdot \cos\left(\frac{1}{2}p\pi - x\right) \cdot x^{p-1} dx = \Gamma(p) \left\{1 + \sum_1^{\infty} (-1)^n \left(\frac{-p}{2n}\right) q^{2n} \sin 2n\lambda\right\} \text{ (VIII, 491).}$$
- $$13) \int e^{qx \cos \lambda} \cos(qx \sin \lambda) \cdot \sin\left(\frac{1}{2}p\pi - x\right) \cdot x^{p-1} dx = \Gamma(p) \sum_1^{\infty} (-1)^n \left(\frac{-p}{2n-1}\right) q^{2n-1} \cos\{(2n-1)\lambda\} \text{ (VIII, 491).}$$
- $$14) \int e^{qx \cos \lambda} \cos(qx \sin \lambda) \cdot \cos\left(\frac{1}{2}p\pi - x\right) \cdot x^{p-1} dx = \Gamma(p) \left\{1 + \sum_1^{\infty} (-1)^n \left(\frac{-p}{2n}\right) q^{2n} \cos 2n\lambda\right\} \text{ (VIII, 491).}$$
- $$15) \int e^{-x^2} \cos(2\sqrt{r}x) \cdot x^{p-1} dx = \frac{1}{q^p} \Gamma(p) \sum_0^{\infty} \frac{(-1)^n}{1^{2n/1}} \frac{p^{n/1}}{q^n} (4r)^n \text{ (VIII, 514).}$$
- $$16) \int e^{-x^2} \cos(2x^2 + qx) \cdot x dx = 0 \text{ (IV, 499).}$$
- $$17) \int e^{-x^2} \cos(2x^2 - qx) \cdot x dx = \frac{1}{8} q e^{-\frac{1}{4}q^2} \sqrt{\pi} \text{ (IV, 500).}$$
- $$18) \int e^{-x^2} \{\sin(2x^2 + qx) + \cos(2x^2 + qx)\} x^2 dx = 0 \text{ (IV, 499).}$$
- $$19) \int e^{-x^2} \{\sin(2x^2 - qx) - \cos(2x^2 - qx)\} x^2 dx = \frac{1}{16} (2 - q^2) e^{-\frac{1}{4}q^2} \sqrt{\pi} \text{ (IV, 500).}$$
- $$20) \int e^{-x^2} (\cos px - i \sin px) \cdot x^s dx = \frac{1^{s/1}}{(q+pi)^{s+1}} \text{ V. T. 81, N. 3.}$$

- 1) $\int e^{-p^2 x^2} \sin qx \cdot x dx = \frac{q}{4p^3} e^{-\frac{q^2}{4p^2}} \sqrt{\pi}$ (VIII, 516*).
- 2) $\int e^{-p^2 x^2} \cos qx \cdot x dx = \frac{1}{2p^2} - \frac{q}{4p^3} \sum_0^{\infty} \frac{(-1)^n}{(n+1)^{n+1/2}} \left(\frac{q}{p}\right)^{2n+1}$ (IV, 500*).
- 3) $\int e^{-x^2} \sin qx \cdot x dx = \frac{1+i}{4} q e^{-\frac{1}{4} q^2} \sqrt{\pi}$ (IV, 502).
- 4) $\int e^{-p^2 x^2} \sin qx \cdot x^2 dx = \frac{q}{4p^3} + \frac{2p^2 - q^2}{8p^5} \sum_0^{\infty} \frac{(-1)^n}{(n+1)^{n+1/2}} \left(\frac{q}{p}\right)^{2n+1}$ (IV, 500*).
- 5) $\int e^{-p^2 x^2} \cos qx \cdot x^2 dx = \frac{2p^2 - q^2}{8p^5} e^{-\frac{q^2}{4p^2}} \sqrt{\pi}$ (IV, 500*).
- 6) $\int e^{-p^2 x^2} \sin qx \cdot x^3 dx = \frac{6p^2 q - q^3}{16p^7} e^{-\frac{q^2}{4p^2}} \sqrt{\pi}$ (IV, 500*).
- 7) $\int e^{-p^2 x^2} \cos qx \cdot x^3 dx = \frac{4p^3 - q^2}{8p^6} - \frac{6p^2 q - q^3}{16p^7} \sum_0^{\infty} \frac{(-1)^n}{(n+1)^{n+1/2}} \left(\frac{q}{p}\right)^{2n+1}$ (IV, 501*).
- 8) $\int e^{-p^2 x^2} \sin qx \cdot x^4 dx = \frac{10p^2 q - q^3}{16p^8} + \frac{12p^4 - 12p^2 q^2 + q^4}{32p^9} \sum_0^{\infty} \frac{(-1)^n}{(n+1)^{n+1/2}} \left(\frac{q}{p}\right)^{2n+1}$
(IV, 500*).
- 9) $\int e^{-p^2 x^2} \cos qx \cdot x^4 dx = \frac{12p^4 - 12p^2 q^2 + q^4}{32p^9} e^{-\frac{q^2}{4p^2}} \sqrt{\pi}$ (IV, 501*).
- 10) $\int e^{-p^2 x^2} \sin qx \cdot x^5 dx = \frac{60p^4 q - 20p^2 q^3 + q^5}{64p^{11}} e^{-\frac{q^2}{4p^2}} \sqrt{\pi}$ (IV, 500*).
- 11) $\int e^{-x^2} \sin qx \cdot x^{2a-1} dx = \frac{a^{a/2}}{2^{2a}} e^{-\frac{1}{4} q^2} \sqrt{\pi} \cdot \sum_0^{\infty} (-1)^n \frac{(a-1)^{n/2-1}}{1^{2n+1/2}} q^{2n+1}$ (IV, 501).
- 12) $\int e^{-x^2} \cos qx \cdot x^{2a} dx = \frac{(a+1)^{a/2}}{2^{2a+1}} e^{-\frac{1}{4} q^2} \sqrt{\pi} \cdot \sum_0^{\infty} (-1)^n \frac{a^{n/2-1}}{1^{2n/2}} q^{2n}$ (IV, 501).
- 13) $\int e^{-r^2 x^2} \sin qx \cdot x^{p-1} dx = \frac{\Gamma(p)}{q^p} \sin \frac{1}{2} p \pi \cdot \left\{ 1 + \sum_1^{\infty} \frac{p^{2n/2}}{1^{n/2}} \left(\frac{r}{q}\right)^{2n} \right\}$ (VIII, 491).
- 14) $\int e^{-r^2 x^2} \cos qx \cdot x^{p-1} dx = \frac{\Gamma(p)}{q^p} \cos \frac{1}{2} p \pi \cdot \left\{ 1 + \sum_1^{\infty} \frac{p^{2n/2}}{1^{n/2}} \left(\frac{r}{q}\right)^{2n} \right\}$ (VIII, 491).
- 15) $\int e^{-p^2 x^2} Tg qx \cdot x dx = \frac{q}{p^3} \sqrt{\pi} \cdot \sum_1^{\infty} (-1)^n n e^{-\left(\frac{nq}{p}\right)^2}$ V. T. 467, N. 8.

F. Algèbr. rat. ent.;

Expon. e^{-ax^2} ;

Circul. Dir.

TABLE 362, suite.

Lim. 0 et ∞ .

$$16) \int e^{-p^2 x^2} \cot qx . x dx = -\frac{q}{p^2} \sqrt{\pi} \cdot \sum_1^{\infty} n e^{-\left(\frac{nq}{p}\right)^2} \quad \text{V. T. 467, N. 7.}$$

$$17) \int e^{-p^2 x^2} \operatorname{Cosec} 2qx . x dx = -\frac{q}{p^2} \sqrt{\pi} \cdot \sum_1^{\infty} (2n-1) e^{-\left(\frac{q}{p}\right)^2 (2n-1)^2} \quad \text{V. T. 467, N. 9.}$$

$$18) \int e^{-p^2 x^2} \cos\left(\frac{1}{2} a\pi + 2px\right) . x^a dx = \frac{(-1)^a}{(2p)^{a+1}} e^{-\frac{p^2}{4r^2}} \sqrt{\pi} \cdot \sum_0^{\infty} (-1)^{n-1} \binom{a}{2n} (n+1)^{n/1} \left(\frac{p}{2r}\right)^{a-2n} \\ \text{(VIII, 575).}$$

F. Algèbr. rat. ent.;

Expon. d' autre forme mon.;

TABLE 363.

Lim. 0 et ∞ .

Circul. Dir.

$$1) \int e^{-qx^p} \sin(rx^p) . x^{i-1} dx = \frac{1}{p} \Gamma\left(\frac{i}{p}\right) . (q^2 + r^2)^{-\frac{i}{2p}} \sin\left(\frac{i}{p} \operatorname{Arctg} \frac{r}{q}\right) \quad \text{V. T. 361, N. 9.}$$

$$2) \int e^{-qx^p} \cos(rx^p) . x^{i-1} dx = \frac{1}{p} \Gamma\left(\frac{i}{p}\right) . (q^2 + r^2)^{-\frac{i}{2p}} \cos\left(\frac{i}{p} \operatorname{Arctg} \frac{r}{q}\right) \quad \text{V. T. 361, N. 10.}$$

$$3) \int e^{-r^2 x^2 - x \cos \lambda} \sin x . x^{p-1} dx = \Gamma(p) . \sin^p \lambda . \left[\sin p \lambda + \sum_1^{\infty} \frac{p^{2n/1}}{1^{n/1}} (-r^2)^n \sin^{2n} \lambda . \sin \{(p+2n)\lambda\} \right] \\ \text{(VIII, 491).}$$

$$4) \int e^{-r^2 x^2 - x \cos \lambda} \cos x . x^{p-1} dx = \Gamma(p) . \sin^p \lambda . \left[\cos p \lambda + \sum_1^{\infty} \frac{p^{2n/1}}{1^{n/1}} (-r^2)^n \sin^{2n} \lambda . \cos \{(p+2n)\lambda\} \right] \\ \text{(VIII, 491).}$$

$$5) \int e^{-px^2} (e^{i qx \sin \lambda} + e^{-i qx \sin \lambda}) \sin(2qx \cos \lambda) . x dx = \frac{q}{p} e^{-\frac{q^2}{p} \cos 2\lambda} \sqrt{\frac{\pi}{p}} . \cos\left(\lambda - \frac{q^2}{p} \sin 2\lambda\right) \\ \text{(IV, 502).}$$

$$6) \int e^{-px^2} (e^{i qx \sin \lambda} - e^{-i qx \sin \lambda}) \cos(2qx \cos \lambda) . x dx = \frac{q}{p} e^{-\frac{q^2}{p} \cos 2\lambda} \sqrt{\frac{\pi}{p}} . \sin\left(\lambda - \frac{q^2}{p} \sin 2\lambda\right) \\ \text{(IV, 502).}$$

$$7) \int e^{-p^2 x^4 + q^2 x^2} \{2px \cos(2pqx^3) + q \sin(2pqx^3)\} dx = \frac{1}{2} \sqrt{\pi} \quad \text{(IV, 503).}$$

$$8) \int e^{-p^2 x^4 + q^2 x^2} \{2px \sin(2pqx^3) - q \cos(2pqx^3)\} dx = 0 \quad \text{(IV, 503).}$$

$$9) \int e^{-px^2 - \frac{q^2}{x^2}} \sin(px^2 \operatorname{Tg} \Phi) . x^2 dx = \frac{1}{4} \sqrt{\pi} . \left(\frac{1}{p} \cos \Phi\right)^{\frac{3}{2}} . \sin\left(2bq + \frac{3}{2}\Phi\right) . e^{-\frac{1}{4}aq} + \\ + \frac{q}{2p} \sqrt{\pi} . \cos \Phi . \sin(2bq - \Phi) . e^{-\frac{1}{4}aq} \quad \text{(IV, 503).}$$

$$10) \int e^{-px^2 - \frac{q^2}{x^2}} \cos(px^2 Tg \phi) \cdot x^a dx = \frac{1}{4} \sqrt{\pi} \cdot \left(\frac{1}{p} \cos \phi\right)^{\frac{1}{2}} \cdot \cos\left(2bq + \frac{3}{2}\phi\right) \cdot e^{-a^2} + \\ + \frac{q}{2p} \sqrt{\pi} \cdot \cos \phi \cdot \cos(2bq - \phi) \cdot e^{-a^2} \quad (\text{IV, 503}).$$

$$11) \int e^{-px^2 - \frac{q^2}{x^2}} \sin(px^2 Tg \phi) \cdot x^a dx = \frac{1}{2} \sqrt{\pi} \cdot e^{-a^2} \left\{ \frac{3}{4} \left(\frac{1}{p} \cos \phi\right)^{\frac{1}{2}} \cdot \sin\left(2bq + \frac{5}{2}\phi\right) + \right. \\ \left. + \frac{q}{p^2} \cos^2 \phi \cdot (\cos 2bq + \sin 2bq) + q^2 \left(\frac{1}{p} \cos \phi\right)^{\frac{1}{2}} \cdot \sin\left(2bq - \frac{5}{2}\phi\right) \right\} \quad (\text{IV, 503}).$$

$$12) \int e^{-px^2 - \frac{q^2}{x^2}} \cos(px^2 Tg \phi) \cdot x^a dx = \frac{1}{2} \sqrt{\pi} \cdot e^{-a^2} \left\{ \frac{3}{4} \left(\frac{1}{p} \cos \phi\right)^{\frac{1}{2}} \cdot \cos\left(2bq + \frac{5}{2}\phi\right) + \right. \\ \left. + \frac{q}{p^2} \cos^2 \phi \cdot (\cos 2bq - \sin 2bq) + q^2 \left(\frac{1}{p} \cos \phi\right)^{\frac{1}{2}} \cdot \cos\left(2bq - \frac{5}{2}\phi\right) \right\} \quad (\text{IV, 503}).$$

Dans 9) à 12) on a $a = \sqrt{\frac{1}{2}p(\sec \phi + 1)}$, $b = \sqrt{\frac{1}{2}p(\sec \phi - 1)}$

$$13) \int e^{(p^2 - q^2)\left(x^2 + \frac{r^2}{x^2}\right)} \sin\left\{2pq\left(x^2 - \frac{r^2}{x^2}\right)\right\} \cdot x^{2a} dx = \frac{1}{2r} e^{-2r\sqrt{(p^2 + q^2)}} \cos\left\{(2a+1)\text{Arcsin}\left(\frac{p}{\sqrt{p^2 + q^2}}\right)\right\} \cdot \\ \cdot \frac{\sqrt{\pi}}{(p^2 + q^2)^{a+\frac{1}{2}}} \sum_{n=0}^{\infty} \frac{(a-n)^{n/2}}{2^{n/2} (2r)^n \sqrt{p^2 + q^2}^n} [p > q] \quad (\text{IV, 504}).$$

$$14) \int e^{(p^2 - q^2)\left(x^2 + \frac{r^2}{x^2}\right)} \cos\left\{2pq\left(x^2 - \frac{r^2}{x^2}\right)\right\} \cdot x^{2a} dx = \frac{1}{2r} e^{-2r\sqrt{(p^2 + q^2)}} \sin\left\{(2a+1)\text{Arcsin}\left(\frac{p}{\sqrt{p^2 + q^2}}\right)\right\} \cdot \\ \cdot \frac{\sqrt{\pi}}{(p^2 + q^2)^{a+\frac{1}{2}}} \sum_{n=0}^{\infty} \frac{(a-n)^{n/2}}{2^{n/2} (2r)^n \sqrt{p^2 + q^2}^n} [p > q] \quad (\text{IV, 504}).$$

$$15) \int e^{-q\left(x^2 + \frac{1}{x^2}\right)} \sin\left\{p\left(x - \frac{1}{x}\right)^2\right\} \cdot x^{2a} dx = \frac{1}{2} e^{-2(q+p)} \sqrt{\frac{\pi}{q+pi}} \cdot \sum_{n=0}^{\infty} \frac{(a+n)^{2n/2-1}}{2^{n/2}} \left\{\frac{1}{2(p+qi)}\right\}^n \\ (\text{IV, 504}).$$

$$16) \int e^{-q\left(x^2 + \frac{1}{x^2}\right)} \cos\left\{p\left(x - \frac{1}{x}\right)^2\right\} \cdot x^{2a} dx = \frac{1}{2} e^{-2(q+p)} \sqrt{\frac{\pi}{q+pi}} \cdot \sum_{n=0}^{\infty} \frac{(a+n)^{2n/2-1}}{2^{n/2}} \left\{\frac{1}{2(p+qi)}\right\}^n \\ (\text{IV, 504}).$$

F. Algèbr. rat. ent.;

Expon. en dén. binôme;

TABLE 364.

Lim. 0 et ∞ .

Circul. Dir.

$$1) \int \frac{\cos qx}{e^x - e^{-x}} x dx = \frac{1}{2} \pi^2 \frac{e^{-qx}}{(1 + e^{-qx})^2} \text{ (IV, 504).}$$

$$2) \int \frac{e^x - e^{-x}}{e^x + e^{-x}} \cos qx \cdot x dx = -\frac{1}{2} \pi^2 e^{-\frac{1}{2}qx} \frac{1 + e^{-qx}}{(1 - e^{-qx})^2} \text{ (IV, 504).}$$

$$3) \int \frac{e^x + e^{-x}}{e^x - e^{-x}} \cos qx \cdot x dx = -\pi^2 \frac{e^{-qx}}{(1 - e^{-qx})^2} \text{ (IV, 505).}$$

$$4) \int \frac{e^x - 1}{e^x + 1} \cos qx \cdot x dx = -2\pi^2 e^{-qx} \frac{1 + e^{-2qx}}{(1 - e^{-2qx})^2} \text{ V. T. 364, N. 1, 3.}$$

$$5) \int \frac{e^x + 1}{e^x - 1} \cos qx \cdot x dx = \frac{-4\pi^2}{(e^{qx} - e^{-qx})^2} \text{ V. T. 364, N. 1, 3.}$$

$$6) \int \frac{x \sin qx}{e^{qx} + e^{-qx}} dx = \frac{1}{4} \frac{e^{\frac{1}{2}qx} - e^{-\frac{1}{2}qx}}{(e^{\frac{1}{2}qx} + e^{-\frac{1}{2}qx})^2} \text{ (IV, 505).}$$

$$7) \int \frac{x \cos qx}{e^{qx} - e^{-qx}} dx = \frac{1}{2} \frac{e^q}{(e^q + 1)^2} \text{ (IV, 505*).}$$

$$8) \int \frac{(1 - e^{-2px}) \sin qx \cdot e^{-px} x^{r-1}}{1 + 2e^{-2px} \cos 2qx + e^{-4px}} dx = \frac{\Gamma(r)}{(p^2 + q^2)^{\frac{r}{2}}} \sin \left(r \operatorname{Arctg} \frac{q}{p} \right) \cdot \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^r}$$

Clausen, Gr. 30, 167.

F. Alg. rat. fract. à dén. x ;

Exponent. $e^{\pm ax}$;

TABLE 365.

Lim. 0 et ∞ .

Circ. Dir. monôme au num.

$$1) \int e^{-px} \sin qx \frac{dx}{x} = \operatorname{Arctg} \frac{q}{p} \text{ (VIII, 344).}$$

$$2) \int e^{-px} \sin qx \frac{dx}{x} = \frac{1}{2} i \log \frac{p-q}{p+q} \text{ (IV, 505).}$$

$$3) \int e^{-px} \cos qx \frac{dx}{x} = \infty \text{ (IV, 505).}$$

$$4) \int e^{-px} \sin^2 qx \frac{dx}{x} = \frac{1}{4} \log \frac{p^2 + q^2}{p^2} \text{ (VIII, 458).}$$

$$5) \int e^{-px} \sin qx \cdot \sin rx \frac{dx}{x} = \frac{1}{4} \log \frac{p^2 + (q+r)^2}{p^2 + (q-r)^2} \text{ V. T. 284, N. 6.}$$

$$6) \int e^{-px} \sin rx \cdot \cos qx \frac{dx}{x} = \frac{1}{2} \operatorname{Arctg} \frac{2pr}{p^2 + q^2 - r^2} \text{ (VIII, 345).}$$

F. Alg. rat. fract. à dén. x ;

Exponent. $e^{\pm ax}$;

TABLE 365, suite.

Lim. 0 et ∞ .

Circ. Dir. monôme au num.

$$7) \int e^{-px} \sin^3 qx \frac{dx}{x} = \frac{1}{2} \operatorname{Arctg} \frac{q}{p} - \frac{1}{4} \operatorname{Arctg} \frac{2q}{p}$$

$$8) \int e^{-px} \sin^2 qx \cdot \sin rx \frac{dx}{x} = \frac{1}{2} \operatorname{Arctg} \frac{r}{p} - \frac{1}{4} \operatorname{Arctg} \frac{2pr}{p^2 + q^2 - r^2}$$

$$9) \int e^{-px} \sin^2 qx \cdot \cos rx \frac{dx}{x} = \frac{1}{8} \iota \frac{\{p^2 + (2q+r)^2\} \{p^2 + (2q-r)^2\}}{(p^2 + r^2)^2}$$

$$10) \int e^{-px} \sin qx \cdot \cos^2 rx \frac{dx}{x} = \frac{1}{2} \operatorname{Arctg} \frac{q}{p} + \frac{1}{4} \operatorname{Arctg} \frac{2pq}{p^2 + r^2 - q^2}$$

$$11) \int e^{-px} \sin qx \cdot \sin rx \cdot \sin sx \frac{dx}{x} = -\frac{1}{4} \operatorname{Arctg} \frac{q+r+s}{p} + \frac{1}{4} \operatorname{Arctg} \frac{q-r+s}{p} + \frac{1}{4} \operatorname{Arctg} \frac{q+r-s}{p} - \frac{1}{4} \operatorname{Arctg} \frac{q-r-s}{p}$$

$$12) \int e^{-px} \sin^4 qx \frac{dx}{x} = \frac{1}{8} \iota \frac{(p^2 + 4q^2)^2}{p^4} - \frac{1}{16} \iota (p^2 + 16q^2)$$

$$13) \int e^{-px} \sin^3 qx \cdot \cos rx \frac{dx}{x} = \frac{3}{8} \operatorname{Arctg} \frac{q+r}{p} + \frac{3}{8} \operatorname{Arctg} \frac{q-r}{p} - \frac{1}{8} \operatorname{Arctg} \frac{3q+r}{p} - \frac{1}{8} \operatorname{Arctg} \frac{3q-r}{p}$$

$$14) \int e^{-px} \sin^2 qx \cdot \sin^2 rx \frac{dx}{x} = \frac{1}{8} \iota \frac{p^2 + 4r^2}{p^2} + \frac{1}{16} \iota \frac{(p^2 + 4q^2)^2}{\{p^2 + 4(q+r)^2\} \{p^2 + 4(q-r)^2\}}$$

$$15) \int e^{-px} \sin^2 qx \cdot \sin rx \cdot \sin sx \frac{dx}{x} = \frac{1}{8} \iota \frac{p^2 + (r+s)^2}{p^2 + (r-s)^2} + \frac{1}{16} \iota \frac{\{p^2 + (2q-r+s)^2\} \{p^2 + (2q+r-s)^2\}}{\{p^2 + (2q+r+s)^2\} \{p^2 + (2q-r-s)^2\}}$$

$$16) \int e^{-px} \sin^2 qx \cdot \sin rx \cdot \cos sx \frac{dx}{x} = \frac{1}{4} \operatorname{Arctg} \frac{r+s}{p} + \frac{1}{4} \operatorname{Arctg} \frac{r-s}{p} - \frac{1}{8} \operatorname{Arctg} \frac{2q+r+s}{p} + \frac{1}{8} \operatorname{Arctg} \frac{2q-r-s}{p} + \frac{1}{8} \operatorname{Arctg} \frac{2q-r+s}{p} - \frac{1}{8} \operatorname{Arctg} \frac{2q+r-s}{p}$$

Sur 7) à 16) voyez E. O. A.

$$17) \int e^{-px} \sin^3 qx \cdot \cos^2 rx \frac{dx}{x} = \frac{1}{16} \iota \left\{ \frac{(p^2 + 4q^2)^2}{p^4} \frac{\{p^2 + 4(q+r)^2\} \{p^2 - 4(q-r)^2\}}{(p^2 + 4r^2)^2} \right\}$$

V. T. 365, N. 4, 9.

$$18) \int e^{-px} \sin^5 qx \frac{dx}{x} = \frac{5}{8} \operatorname{Arctg} \frac{q}{p} - \frac{5}{16} \operatorname{Arctg} \frac{3q}{p} + \frac{1}{16} \operatorname{Arctg} \frac{5q}{p}$$

$$19) \int e^{-px} \sin^3 qx \cdot \sin^2 rx \frac{dx}{x} = \frac{1}{16} \operatorname{Arctg} \frac{3q+2r}{p} + \frac{1}{16} \operatorname{Arctg} \frac{3q-2r}{p} - \frac{3}{16} \operatorname{Arctg} \frac{q+2r}{p} - \frac{3}{16} \operatorname{Arctg} \frac{q-2r}{p} - \frac{1}{8} \operatorname{Arctg} \frac{3q}{p} + \frac{3}{8} \operatorname{Arctg} \frac{q}{p}$$

F. Alg. rat. fract. à dén. x ;

Exponent. $e^{\pm ax}$;

TABLE 365, suite.

Lim. 0 et ∞ .

Circ. Dir. monôme au num.

$$20) \int e^{-px} \sin^3 qx \cdot \sin^2 rx \cdot \sin sx \frac{dx}{x} = -\frac{1}{16} \operatorname{Arctg} \frac{2q-2r-s}{p} - \frac{1}{16} \operatorname{Arctg} \frac{2q+2r-s}{p} + \\ + \frac{1}{16} \operatorname{Arctg} \frac{2q-2r+s}{p} + \frac{1}{16} \operatorname{Arctg} \frac{2q+2r+s}{p} - \frac{1}{8} \operatorname{Arctg} \frac{2q+s}{p} + \frac{1}{8} \operatorname{Arctg} \frac{2q-s}{p} - \\ - \frac{1}{8} \operatorname{Arctg} \frac{2r+s}{p} + \frac{1}{8} \operatorname{Arctg} \frac{2r-s}{p} + \frac{1}{4} \operatorname{Arctg} \frac{s}{p}$$

Sur 17) à 20) voyez E. O. A.

$$21) \int e^{-p^2 x^2} \sin qx \frac{dx}{x} = \frac{q}{2p} \sqrt{\pi} \cdot \sum_0^{\infty} \frac{(-1)^n}{(2n+1)1^{n/1}} \left(\frac{q}{2p}\right)^{2n} \quad (\text{IV, 506}).$$

F. Alg. rat. fract. à dén. x ;

Expon. de Circ. Directe;

TABLE 366.

Lim. 0 et ∞ .

Circ. Dir. monôme au num.

$$1) \int e^{s \cos rx} \sin(s \sin rx) \frac{dx}{x} = \frac{1}{2} \pi (e^s - 1) \quad (\text{VIII, 640}).$$

$$2) \int e^{s \cos rx} \sin(arx + p \sin rx) \frac{dx}{x} = \frac{\pi}{2} e^s \quad (\text{VIII, 640*}).$$

$$3) \int e^{s \cos rx} \sin(s \sin rx) \cdot \cos arx \frac{dx}{x} = \frac{\pi}{2} \sum_n \frac{1}{1^{n/1}} s^n \quad (\text{VIII, 640*}).$$

$$4) \int e^{s \cos rx} \cos(s \sin rx) \cdot \sin arx \frac{dx}{x} = \frac{\pi}{2} \sum_0^n \frac{1}{1^{n/1}} s^n \quad (\text{VIII, 640*}).$$

$$5) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin(s \sin rx + s_1 \sin r_1 x + \dots) \frac{dx}{x} = \frac{\pi}{2} (e^{s+s_1+\dots} - 1) \quad (\text{H, 16}).$$

$$6) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin(s \sin rx + s_1 \sin r_1 x + \dots + tx) \frac{dx}{x} = \frac{\pi}{2} e^{s+s_1+\dots} \quad (\text{H, 16}).$$

$$7) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin(s \sin rx + s_1 \sin r_1 x + \dots - tx) \frac{dx}{x} = \frac{\pi}{2} (e^{s+s_1+\dots} - 2) \quad (\text{H, 16}).$$

$$8) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin(s \sin rx + s_1 \sin r_1 x + \dots + tx) \frac{dx}{x} = \frac{\pi}{2} e^{s+s_1+\dots} \quad (\text{H, 17}).$$

$$9) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin(s \sin rx + s_1 \sin r_1 x + \dots) \cdot \cos x \frac{dx}{x} = \frac{\pi}{2} (e^{s+s_1+\dots} - 1) \quad (\text{H, 16}).$$

$$10) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin(s \sin rx + s_1 \sin r_1 x + \dots + tx) \cdot \cos x \frac{dx}{x} = \frac{\pi}{2} e^{s+s_1+\dots} \quad (\text{H, 17}).$$

$$11) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \cos(r \sin sx + r_1 \sin s_1 x + \dots) \sin x \frac{dx}{x} = \frac{\pi}{2} \quad (\text{H, 16}).$$

$$12) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \cos(r \sin sx + r_1 \sin s_1 x + \dots + tx) \sin x \frac{dx}{x} = 0 \quad (\text{H, 17}).$$

$$13) \int e^{t \cos ux + t_1 \cos u_1 x + \dots} \cos^s rx \cos^{s_1} r_1 x \dots \sin\{(sr + s_1 r_1 + \dots)x + t \sin ux + t_1 \sin u_1 x + \dots\} \frac{dx}{x} = \\ = \frac{\pi}{2} e^{t+t_1+\dots} \quad (\text{H, 19}).$$

$$14) \int e^{t \cos ux + t_1 \cos u_1 x + \dots} \cos^s rx \cos^{s_1} r_1 x \dots \sin\{(sr + s_1 r_1 + \dots + 1)x + t \sin ux + t_1 \sin u_1 x + \dots\} \frac{dx}{x} = \\ = \frac{\pi}{2} e^{t+t_1+\dots} \quad (\text{H, 20}).$$

$$15) \int e^{t \cos ux + t_1 \cos u_1 x + \dots} \cos^s rx \cos^{s_1} r_1 x \dots \sin\{(sr + s_1 r_1 + \dots - 1)x + t \sin ux + t_1 \sin u_1 x + \dots\} \frac{dx}{x} = \\ = \frac{\pi}{2^{s+s_1+\dots}} \{2^{s+s_1+\dots-1} e^{t+t_1+\dots} - 1\} \quad (\text{H, 20}).$$

$$16) \int e^{t \cos ux + t_1 \cos u_1 x + \dots} \cos^s rx \cos^{s_1} r_1 x \dots \sin\{(sr + s_1 r_1 + \dots)x + t \sin ux + t_1 \sin u_1 x + \dots\}. \\ \cos x \frac{dx}{x} = \frac{\pi}{2^{t+s+s_1+\dots}} \{2^{s+s_1+\dots} e^{t+t_1+\dots} - 1\} \quad (\text{H, 20}).$$

$$17) \int e^{t \cos ux + t_1 \cos u_1 x + \dots} \cos^s rx \cos^{s_1} r_1 x \dots \cos\{(sr + s_1 r_1 + \dots)x + t \sin ux + t_1 \sin u_1 x + \dots\}. \\ \sin x \frac{dx}{x} = \frac{\pi}{2^{1+s+s_1+\dots}} \quad (\text{H, 20}).$$

$$18) \int e^{t \cos ux + t_1 \cos u_1 x + \dots} \cos^s rx \cos^{s_1} r_1 x \dots \sin\{(sr + s_1 r_1 + \dots + p)x + t \sin ux + t_1 \sin u_1 x + \dots\} \frac{dx}{x} = \\ = \frac{\pi}{2} e^{t+t_1+\dots} \quad (\text{H, 23}).$$

$$19) \int e^{t \cos ux + t_1 \cos u_1 x + \dots} \cos^s rx \cos^{s_1} r_1 x \dots \sin\{(sr + s_1 r_1 + \dots + p)x + t \sin ux + t_1 \sin u_1 x + \dots\}. \\ \cos x \frac{dx}{x} = \frac{\pi}{2} e^{t+t_1+\dots} \quad (\text{H, 23}).$$

$$20) \int e^{t \cos ux + t_1 \cos u_1 x + \dots} \cos^s rx \cos^{s_1} r_1 x \dots \cos\{(sr + s_1 r_1 + \dots + p)x + t \sin ux + t_1 \sin u_1 x + \dots\}. \\ \sin x \frac{dx}{x} = 0 \quad (\text{H, 23}).$$

$$21) \int e^{t \cos u x + t_1 \cos u_1 x + \dots \cos^q p x \cdot \cos^{q_1} p_1 x \dots \sin^s r x \cdot \sin^{s_1} r_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (qp + q_1 p_1 + \dots + sr + s_1 r_1 + \dots) x - t \sin u x - t_1 \sin u_1 x - \dots \right\} \frac{dx}{x} = \frac{\pi}{2^{1+q+q_1+\dots+s+s_1+\dots}} \quad (\text{H, 21}).$$

$$22) \int e^{t \cos u x + t_1 \cos u_1 x + \dots \cos^q p x \cdot \cos^{q_1} p_1 x \dots \sin^s r x \cdot \sin^{s_1} r_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (qp + q_1 p_1 + \dots + sr + s_1 r_1 + \dots + 1) x - t \sin u x - t_1 \sin u_1 x - \dots \right\} \frac{dx}{x} = 0 \quad (\text{H, 22}).$$

$$23) \int e^{t \cos u x + t_1 \cos u_1 x + \dots \cos^q p x \cdot \cos^{q_1} p_1 x \dots \sin^s r x \cdot \sin^{s_1} r_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (qp + q_1 p_1 + \dots + sr + s_1 r_1 + \dots - 1) x - t \sin u x - t_1 \sin u_1 x - \dots \right\} \frac{dx}{x} = \frac{\pi}{2^{q+q_1+\dots+s+s_1+\dots}} \quad (\text{H, 22}).$$

$$24) \int e^{t \cos u x + t_1 \cos u_1 x + \dots \cos^q p x \cdot \cos^{q_1} p_1 x \dots \sin^s r x \cdot \sin^{s_1} r_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (qp + q_1 p_1 + \dots + sr + s_1 r_1 + \dots + w) x - t \sin u x - t_1 \sin u_1 x - \dots \right\} \frac{dx}{x} = 0 \quad (\text{H, 23}).$$

$$25) \int e^{t \cos u x + t_1 \cos u_1 x + \dots \cos^q p x \cdot \cos^{q_1} p_1 x \dots \sin^s r x \cdot \sin^{s_1} r_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (qp + q_1 p_1 + \dots + sr + s_1 r_1 + \dots) x - t \sin u x - t_1 \sin u_1 x - \dots \right\} \cdot \cos x \frac{dx}{x} = \frac{\pi}{2^{1+q+q_1+\dots+s+s_1+\dots}} \quad (\text{H, 21}).$$

$$26) \int e^{t \cos u x + t_1 \cos u_1 x + \dots \cos^q p x \cdot \cos^{q_1} p_1 x \dots \sin^s r x \cdot \sin^{s_1} r_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (qp + q_1 p_1 + \dots + sr + s_1 r_1 + \dots + w) x - t \sin u x - t_1 \sin u_1 x - \dots \right\} \cdot \cos x \frac{dx}{x} = 0 \quad (\text{H, 23}).$$

$$27) \int e^{t \cos u x + t_1 \cos u_1 x + \dots \cos^q p x \cdot \cos^{q_1} p_1 x \dots \sin^s r x \cdot \sin^{s_1} r_1 x \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (qp + q_1 p_1 + \dots + sr + s_1 r_1 + \dots) x - t \sin u x - t_1 \sin u_1 x - \dots \right\} \cdot \sin x \frac{dx}{x} = \frac{\pi}{2^{1+q+q_1+\dots+s+s_1+\dots}} \quad (\text{H, 21}).$$

$$28) \int e^{t \cos u x + t_1 \cos u_1 x + \dots \cos^q p x \cdot \cos^{q_1} p_1 x \dots \sin^s r x \cdot \sin^{s_1} r_1 x \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (qp + q_1 p_1 + \dots + sr + s_1 r_1 + \dots + w) x - t \sin u x - t_1 \sin u_1 x - \dots \right\} \cdot \sin x \frac{dx}{x} = 0 \quad (\text{H, 23}).$$

$$1) \int \frac{1 - e^{-qx}}{x} \sin px \, dx = \operatorname{Arctg} \frac{q}{p} \text{ V. T. 367, N. 3.}$$

$$2) \int \frac{1 - e^{-qx}}{x} \cos px \, dx = \frac{1}{2} \operatorname{Arctg} \frac{p^2 + q^2}{p^2} \text{ V. T. 367, N. 4.}$$

$$3) \int \frac{e^{-qx} - e^{-rx}}{x} \sin px \, dx = \operatorname{Arctg} \frac{(r-q)p}{p^2 + qr} \text{ (VIII, 359).}$$

$$4) \int \frac{e^{-qx} - e^{-rx}}{x} \cos px \, dx = \frac{1}{2} \operatorname{Arctg} \frac{p^2 + r^2}{p^2 + q^2} \text{ (VIII, 359).}$$

$$5) \int \left(\cos qx - \frac{e^{px} + e^{-px}}{2x} \right) \frac{dx}{x} = \operatorname{Arctg} \frac{p}{q} \text{ (VIII, 456).}$$

$$6) \int \frac{1 - \cos px}{x} e^{-qx} \, dx = \frac{1}{2} \operatorname{Arctg} \frac{p^2 + q^2}{q^2} \text{ (VIII, 581).}$$

$$7) \int \frac{\sin px - \sin qx}{x} e^{-rx} \, dx = \operatorname{Arctg} \frac{(p-q)r}{pq + r^2} \text{ V. T. 367, N. 3.}$$

$$8) \int \frac{\cos px - \cos qx}{x} e^{-rx} \, dx = \frac{1}{2} \operatorname{Arctg} \frac{q^2 + r^2}{p^2 + r^2} \text{ (VIII, 581).}$$

$$9) \int \frac{e^{-px} - \cos qx}{x} \, dx = \operatorname{Arctg} \frac{q}{p} \text{ (VIII, 441).}$$

$$10) \int \frac{e^{-px} - e^{-qx}}{x} \cos rx \, dx = \frac{1}{2} \operatorname{Arctg} \frac{q^2 + r^2}{p^2} \text{ V. T. 367, N. 12.}$$

$$11) \int \frac{e^{-px} \sin qx - e^{-rx} \sin sx}{x} \, dx = \operatorname{Arctg} \frac{qr - ps}{pr + qs} \text{ (VIII, 337).}$$

$$12) \int \frac{e^{-px} \cos qx - e^{-rx} \cos sx}{x} \, dx = \frac{1}{2} \operatorname{Arctg} \frac{r^2 + s^2}{p^2 + q^2} \text{ (VIII, 337).}$$

$$13) \int \{e^{-x^{2^a}} - \cos(x^{2^b})\} \, dx = \left(\frac{1}{2^b} - \frac{1}{2^a} \right) A \text{ (VIII, 702).}$$

$$14) \int \frac{e^{p \sin x} - e^{-p \sin x}}{x} \cos(p \cos x) \cdot \sin x \cdot \sin 2ax \, dx = \pi p^{2^a} \frac{(-1)^a}{1^{2^a+1/1}} \text{ (VIII, 279*)}.}$$

$$15) \int \frac{e^{p \sin x} + e^{-p \sin x}}{x} \cos(p \cos x) \cdot \sin x \cdot \cos \{(2a-1)x\} \, dx = \pi p^{2^a} \frac{(-1)^a}{1^{2^a+1/1}} \text{ (VIII, 279).}$$

$$16) \int \frac{e^{p \sin x} + e^{-p \sin x}}{x} \sin(p \cos x) \cdot \sin ax \, dx = \pi \sum_0^a \frac{(-p)^n}{1^{2^n+1/1}} \text{ (VIII, 639).}$$

F. Algèbr. rat. fract. à dén. x ;

Exponentielle;

TABLE 367, suite.

Lim. 0 et ∞ .

Circ. Dir. Fonct. polyn. au num.

$$17) \int \frac{e^{p \sin x} - e^{-p \sin x}}{x} \sin(p \cos x) \cdot \cos ax \, dx = -\pi \sum_n \frac{(-p)^n}{1^{2n+1}} \text{ (VIII, 639).}$$

$$18) \int \frac{e^{p \sin x} + e^{-p \sin x}}{x} \cos(p \cos x) \cdot \sin ax \, dx = \pi \sum_0^a \frac{(-p)^n}{1^{2n+1}} \text{ (VIII, 639).}$$

$$19) \int \frac{e^{p \sin x} - e^{-p \sin x}}{x} \cos(p \cos x) \cdot \cos ax \, dx = \pi \sum_n \frac{(-p)^n}{1^{2n+1}} \text{ (VIII, 639).}$$

$$20) \int \frac{e^{p \sin x} + e^{-p \sin x}}{x} \cos(p \cos x) \cdot \cos x \cdot \sin \{(2a-1)x\} \, dx = \pi p^{2a} \frac{(-1)^{a-1}}{1^{2a+1}} + \pi \sum_0^{2a} \frac{(-p)^n}{1^{2n+1}}$$

V. T. 367, N. 15, 18.

$$21) \int \frac{e^{p \sin x} - e^{-p \sin x}}{x} \cos(p \cos x) \cdot \cos x \cdot \cos 2ax \, dx = \pi p^{2a} \frac{(-1)^a}{1^{2a+1}} + \pi \sum_{2a+1}^{\infty} \frac{(-p)^n}{1^{2n+1}}$$

V. T. 367, N. 14, 19.

F. Alg. rat. fract. à dén. x^2 ;

Exponent. e^{ax} ;

TABLE 368.

Lim. 0 et ∞ .

Circul. Directe.

$$1) \int e^{-px} \sin qx \cdot \sin rx \frac{dx}{x^2} = \frac{q}{2} \operatorname{Arctg} \left(\frac{2pr}{p^2 + q^2 - r^2} \right) + \frac{r}{2} \operatorname{Arctg} \left(\frac{2pq}{p^2 - q^2 + r^2} \right) + \frac{p}{4} \frac{p^2 + (r-q)^2}{p^2 + (r+q)^2} \text{ (VIII, 345).}$$

$$2) \int e^{-px} \sin^2 qx \frac{dx}{x^2} = q \operatorname{Arctg} \frac{2q}{p} - \frac{p}{4} \frac{p^2 + 4q^2}{p^2} \text{ (VIII, 345*)}.$$

$$3) \int e^{-px} \cos^2 qx \frac{dx}{x^2} = \infty \text{ (VIII, 361).}$$

$$4) \int e^{-px} \sin qx \cdot \sin rx \cdot \sin sx \frac{dx}{x^2} = \frac{p}{4} \operatorname{Arctg} \frac{q+r+s}{p} - \frac{p}{4} \operatorname{Arctg} \frac{q-r+s}{p} - \frac{p}{4} \operatorname{Arctg} \frac{q+r-s}{p} + \frac{p}{4} \operatorname{Arctg} \frac{q-r-s}{p} + \frac{q+r+s}{8} \frac{p^2 + (q+r+s)^2}{p^2 + (q+r-s)^2} - \frac{q+r-s}{8} \frac{p^2 + (q-r+s)^2}{p^2 + (q+r-s)^2} - \frac{q-r+s}{8} \frac{p^2 + (q-r+s)^2}{p^2 + (q-r-s)^2} + \frac{q-r-s}{8} \frac{p^2 + (q-r-s)^2}{p^2 + (q-r-s)^2} \text{ (E. O. A).}$$

$$5) \int e^{-px} \sin qx \cdot \sin rx \cdot \cos qx \frac{dx}{x^2} = \frac{q+r+s}{4} \operatorname{Arctg} \frac{q+r+s}{p} - \frac{q-r+s}{4} \operatorname{Arctg} \frac{q-r+s}{p} - \frac{q+r-s}{4} \operatorname{Arctg} \frac{q+r-s}{p} + \frac{q-r-s}{4} \operatorname{Arctg} \frac{q-r-s}{p} + \frac{p}{8} \frac{p^2 + (q-r+s)^2}{p^2 + (q+r+s)^2} + \frac{p}{8} \frac{p^2 + (q+r-s)^2}{p^2 + (q-r-s)^2} \text{ (VIII, 346).}$$

$$6) \int e^{-px} \sin^2 qx \cdot \sin rx \frac{dx}{x^2} = \frac{p}{4} \operatorname{Arctg} \frac{2q+r}{p} - \frac{p}{4} \operatorname{Arctg} \frac{2q-r}{p} - \frac{p}{2} \operatorname{Arctg} \frac{r}{p} + \\ + \frac{2q+r}{8} \ell \{p^2 + (2q+r)^2\} - \frac{2q-r}{8} \ell \{p^2 + (2q-r)^2\} - \frac{r}{4} \ell (p^2 + r^2)$$

$$7) \int e^{-px} \sin^2 qx \cdot \cos rx \frac{dx}{x^2} = \frac{2q+r}{4} \operatorname{Arctg} \frac{2q+r}{p} - \frac{2q-r}{4} \operatorname{Arctg} \frac{r-2q}{p} - \frac{r}{2} \operatorname{Arctg} \frac{r}{p} + \\ + \frac{p}{8} \ell \frac{(p^2 + r^2)^2}{\{p^2 + (2q+r)^2\} \{p^2 + (2q-r)^2\}}$$

$$8) \int e^{-px} \sin^2 qx \frac{dx}{x^2} = \frac{p}{4} \operatorname{Arctg} \frac{3q}{p} - \frac{3p}{4} \operatorname{Arctg} \frac{q}{p} + \frac{3q}{8} \ell \frac{p^2 + 9q^2}{p^2 + q^2}$$

$$9) \int e^{-px} \sin^2 qx \cdot \sin rx \cdot \sin sx \frac{dx}{x^2} = \frac{r+s}{4} \operatorname{Arctg} \frac{r+s}{p} - \frac{r-s}{4} \operatorname{Arctg} \frac{r-s}{p} - \frac{2q+r+s}{8} \\ \operatorname{Arctg} \frac{2q+r+s}{p} + \frac{2q-r+s}{8} \operatorname{Arctg} \frac{2q-r+s}{p} + \frac{2q+r-s}{8} \operatorname{Arctg} \frac{2q+r-s}{p} - \\ - \frac{2q-r-s}{8} \operatorname{Arctg} \frac{2q-r-s}{p} + \frac{p}{8} \ell \frac{p^2 + (r-s)^2}{p^2 + (r+s)^2} + \frac{p}{16} \\ \ell \frac{\{p^2 + (2q+r+s)^2\} \{p^2 + (2q-r-s)^2\}}{\{p^2 + (2q-r+s)^2\} \{p^2 + (2q+r-s)^2\}}$$

$$10) \int e^{-px} \sin^2 qx \cdot \sin^2 rx \frac{dx}{x^2} = \frac{r}{2} \operatorname{Arctg} \frac{2r}{p} - \frac{q+r}{4} \operatorname{Arctg} \frac{2(q+r)}{p} - \frac{q-r}{4} \operatorname{Arctg} \frac{2(q-r)}{p} + \\ + \frac{q}{2} \operatorname{Arctg} \frac{2q}{p} - \frac{p}{8} \ell \frac{p^2 + 4r^2}{p^2} + \frac{p}{16} \ell \frac{\{p^2 + 4(q+r)^2\} \{p^2 + 4(q-r)^2\}}{(p^2 + 4q^2)^2}$$

$$11) \int e^{-px} \sin^2 qx \cdot \sin rx \cdot \cos sx \frac{dx}{x^2} = \frac{p}{8} \operatorname{Arctg} \frac{2q+r+s}{p} - \frac{p}{8} \operatorname{Arctg} \frac{2q-r+s}{p} + \frac{p}{8} \operatorname{Arctg} \frac{2q+r-s}{p} - \\ - \frac{p}{8} \operatorname{Arctg} \frac{2q-r-s}{p} - \frac{p}{4} \operatorname{Arctg} \frac{r+s}{p} - \frac{p}{4} \operatorname{Arctg} \frac{r-s}{p} + \frac{2q+r+s}{16} \ell \{p^2 + (2q+r+s)^2\} - \\ - \frac{2q-r+s}{16} \ell \{p^2 + (2q-r+s)^2\} + \frac{2q+r-s}{16} \ell \{p^2 + (2q+r-s)^2\} - \frac{2q-r-s}{16} \\ \ell \{p^2 + (2q-r-s)^2\} - \frac{s+r}{8} \ell \{p^2 + (s+r)^2\} + \frac{s-r}{8} \ell \{p^2 + (s-r)^2\}$$

$$12) \int e^{-px} \sin qx \cdot \sin rx \cdot \cos^2 qx \frac{dx}{x^2} = \frac{q+r}{4} \operatorname{Arctg} \frac{q+r}{p} - \frac{q-r}{4} \operatorname{Arctg} \frac{q-r}{p} + \frac{q+r+2s}{8} \\ \operatorname{Arctg} \frac{q+r+2s}{p} - \frac{q+r-2s}{8} \operatorname{Arctg} \frac{q+r-2s}{p} - \frac{q-r+2s}{8} \operatorname{Arctg} \frac{q-r+2s}{p} + \\ + \frac{q-r-2s}{8} \operatorname{Arctg} \frac{q-r-2s}{p} + \frac{p}{8} \ell \frac{p^2 + (q-r)^2}{p^2 + (q+r)^2} + \frac{p}{16} \\ \ell \frac{\{p^2 + (q-r+2s)^2\} \{p^2 + (q+r-2s)^2\}}{\{p^2 + (q+r+2s)^2\} \{p^2 + (q-r-2s)^2\}}$$

$$13) \int e^{-px} \sin^2 qx \cdot \cos^2 rx \frac{dx}{x^2} = \frac{q}{2} \operatorname{Arctg} \frac{2q}{p} + \frac{q+r}{4} \operatorname{Arctg} \frac{2(q+r)}{p} - \frac{q-r}{4} \operatorname{Arctg} \frac{2(r-q)}{p} - \\ - \frac{r}{2} \operatorname{Arctg} \frac{2r}{p} - \frac{p}{8} l \frac{p^2 + 4q^2}{p^2} + \frac{p}{16} l \frac{(p^2 + 4r^2)^2}{\{p^2 + 4(q+r)^2\} \{p^2 + 4(q-r)^2\}}$$

$$14) \int e^{-px} \sin^3 qx \cdot \cos rx \frac{dx}{x^2} = \frac{p}{8} \operatorname{Arctg} \frac{3q+r}{p} - \frac{p}{8} \operatorname{Arctg} \frac{r-3q}{p} - \frac{3p}{8} \operatorname{Arctg} \frac{q+r}{p} + \\ + \frac{3p}{8} \operatorname{Arctg} \frac{r-q}{p} + \frac{3q+r}{16} pl \{p^2 + (3q+r)^2\} + \frac{3q-r}{16} pl \{p^2 + (3q-r)^2\} - \\ - \frac{q+r}{16} 3pl \{p^2 + (q+r)^2\} + \frac{q-r}{16} 3pl \{p^2 + (q-r)^2\}$$

$$15) \int e^{-px} \sin^4 qx \frac{dx}{x^2} = q \operatorname{Arctg} \frac{2q}{p} - \frac{q}{2} \operatorname{Arctg} \frac{4q}{p} - \frac{p}{8} l \frac{(p^2 + 4q^2)^2}{p^2} + \frac{p}{16} l (p^2 + 16q^2)$$

$$16) \int e^{-px} \sin^2 qx \cdot \sin^2 rx \cdot \sin sx \frac{dx}{x^2} = \frac{p}{16} \operatorname{Arctg} \frac{2q-2r-s}{p} + \frac{p}{16} \operatorname{Arctg} \frac{2q+2r-s}{p} - \frac{p}{16} \\ \operatorname{Arctg} \frac{2q-2r+s}{p} - \frac{p}{16} \operatorname{Arctg} \frac{2q+2r+s}{p} + \frac{p}{8} \operatorname{Arctg} \frac{2q+s}{p} - \frac{p}{8} \operatorname{Arctg} \frac{2q-s}{p} + \frac{p}{8} \\ \operatorname{Arctg} \frac{2r+s}{p} - \frac{p}{8} \operatorname{Arctg} \frac{2r-s}{p} - \frac{p}{4} \operatorname{Arctg} \frac{s}{p} - \frac{2q+2r+s}{32} l \{p^2 + (2q+2r+s)^2\} - \\ - \frac{2q-2r+s}{32} l \{p^2 + (2q-2r+s)^2\} + \frac{2q+2r-s}{32} l \{p^2 + (2q+2r-s)^2\} + \\ + \frac{2q-2r-s}{32} l \{p^2 + (2q-2r-s)^2\} + \frac{2q+s}{16} l \{p^2 + (2q+s)^2\} - \frac{2q-s}{16} p \\ l \{p^2 + (2q-s)^2\} + \frac{2r+s}{16} l \{p^2 + (2r+s)^2\} - \frac{2r-s}{16} l \{p^2 + (2r-s)^2\} - \frac{1}{8} ps l (p^2 + s^2)$$

$$17) \int e^{-px} \sin^3 qx \cdot \sin^2 rx \frac{dx}{x^2} = \frac{3p}{16} \operatorname{Arctg} \frac{q+2r}{p} - \frac{3p}{16} \operatorname{Arctg} \frac{2r-q}{p} - \frac{p}{16} \operatorname{Arctg} \frac{3q+2r}{p} + \\ + \frac{p}{16} \operatorname{Arctg} \frac{2r-3q}{p} + \frac{p}{8} \operatorname{Arctg} \frac{3q}{p} - \frac{3p}{8} \operatorname{Arctg} \frac{q}{p} - \frac{3q+2r}{32} l \{p^2 + (3q+2r)^2\} - \\ - \frac{3q-2r}{32} l \{p^2 + (3q-2r)^2\} + 3 \frac{q+2r}{32} l \{p^2 + (q+2r)^2\} + \\ + 3 \frac{q-2r}{32} l \{p^2 + (q-2r)^2\} + \frac{3q}{16} l \frac{p^2 + 9q^2}{p^2 + q^2}$$

$$18) \int e^{-px} \sin^2 qx \cdot \sin rx \cdot \cos^2 sx \frac{dx}{x^2} = \frac{(2q+r+2s)^2 - p^2}{32} \operatorname{Arctg} \frac{2q+r+2s}{p} + \frac{(2q-r-2s)^2 - p^2}{32} \\ \operatorname{Arctg} \frac{2q-r-2s}{p} + \frac{(2q-r+2s)^2 - p^2}{32} \operatorname{Arctg} \frac{2q-r+2s}{p} - \frac{(2q+r-2s)^2 - p^2}{32}$$

$$\begin{aligned}
& \operatorname{Arctg} \frac{2q+r-2s}{p} - \frac{(r+2s)^2 - p^2}{16} \operatorname{Arctg} \frac{r+2s}{p} - \frac{(r-2s)^2 - p^2}{16} \operatorname{Arctg} \frac{r-2s}{p} + \\
& + \frac{(2q+r)^2 - p^2}{16} \operatorname{Arctg} \frac{2q+r}{p} - \frac{(2q-r)^2 - p^2}{16} \operatorname{Arctg} \frac{2q-r}{p} + \frac{p^2 - r^2}{8} \operatorname{Arctg} \frac{r}{p} - \\
& - \frac{2q+r+2s}{32} p l \{ p^2 + (2q+r+2s)^2 \} + \frac{2q-r-2s}{32} p l \{ p^2 + (2q-r-2s)^2 \} + \\
& + \frac{2q-r+2s}{32} p l \{ p^2 + (2q-r+2s)^2 \} + \frac{2q+r-2s}{32} p l \{ p^2 + (2q+r-2s)^2 \} + \\
& + \frac{r+2s}{16} p l \{ p^2 + (r+2s)^2 \} + \frac{r-2s}{16} p l \{ p^2 + (r-2s)^2 \} - \frac{2q+r}{16} p l \{ p^2 + (2q+r)^2 \} + \\
& + \frac{2q-r}{16} p l \{ p^2 + (2q-r)^2 \} + \frac{1}{8} p r l (p^2 + r^2)
\end{aligned}$$

$$\begin{aligned}
19) \int e^{-px} \sin^5 qx \frac{dx}{x^2} = & -\frac{5p}{8} \operatorname{Arctg} \frac{q}{p} + \frac{5p}{16} \operatorname{Arctg} \frac{3q}{p} - \frac{p}{16} \operatorname{Arctg} \frac{5q}{p} - \frac{5q}{16} l(p^2 + q^2) + \\
& + \frac{15q}{32} l(p^2 + 9q^2) - \frac{5q}{32} l(p^2 + 25q^2)
\end{aligned}$$

Sur 6) à 19) voyez E. O. A.

$$20) \int \frac{\cos qx - \cos rx}{x^2} e^{-px} dx = \frac{p}{2} l \frac{p^2 + q^2}{p^2 + r^2} + r \operatorname{Arctg} \frac{r}{p} - q \operatorname{Arctg} \frac{q}{p} \text{ V. T. 368, N. 26.}$$

$$21) \int \frac{e^{-px} - e^{-qx}}{x^2} \sin rx dx = \frac{r}{2} l \frac{q^2 + r^2}{p^2 + r^2} + q \operatorname{Arctg} \frac{r}{q} - p \operatorname{Arctg} \frac{q}{p} \text{ (IV, 509).}$$

$$22) \int \{ q e^{-px} \sin rx - r e^{-qx} \sin qx \} \frac{dx}{x^2} = qr \left\{ \frac{1}{2} l \frac{q^2 + r^2}{p^2 + r^2} + \frac{s}{q} \operatorname{Arccot} \frac{s}{q} - \frac{p}{r} \operatorname{Arccot} \frac{p}{r} \right\}$$

$$23) \int \{ q - e^{-px} (p \sin qx + q \cos qx) \} \frac{dx}{x^2} = (p^2 + q^2) \operatorname{Arctg} \frac{q}{p}$$

$$24) \int \{ q e^{-px} - \frac{1}{x} \sin qx \cdot e^{-rx} \} \frac{dx}{x} = \frac{q}{2} l \frac{q^2 + r^2}{q^2} + r \operatorname{Arctg} \frac{q}{r} - q$$

Sur 22) à 24) voyez Winckler, Sitz. Ber. Wien. 21, 359.

$$25) \int \frac{\sin^2 qx - \sin^2 rx}{x^2} e^{-px} dx = q \operatorname{Arctg} \frac{2q}{p} - r \operatorname{Arctg} \frac{2r}{p} + \frac{p}{4} l \frac{p^2 + 4r^2}{p^2 + 4q^2} \text{ V. T. 368, N. 26.}$$

$$26) \int \frac{\cos^2 qx - \cos^2 rx}{x^2} e^{-px} dx = r \operatorname{Arctg} \frac{2r}{p} - q \operatorname{Arctg} \frac{2q}{p} + \frac{p}{4} l \frac{p^2 + 4q^2}{p^2 + 4r^2} \text{ (VIII, 361).}$$

- 1) $\int e^{-px^2} \sin\left(\frac{2q^2}{x^2}\right) \frac{dx}{x^2} = e^{-2pq} \frac{\sin 2pq + \cos 2pq}{4q} \sqrt{\pi}$ V. T. 268, N. 12.
- 2) $\int e^{-px^2} \cos\left(\frac{2q^2}{x^2}\right) \frac{dx}{x^2} = e^{-2pq} \frac{\cos 2pq - \sin 2pq}{4q} \sqrt{\pi}$ V. T. 268, N. 13.
- 3) $\int e^{-\frac{1}{x^2}} \sin(2p^2 x^2) \frac{dx}{x^2} = \frac{1}{2} e^{-2p} \sin 2p \cdot \sqrt{\pi}$ V. T. 268, N. 12.
- 4) $\int e^{-\frac{1}{x^2}} \cos(2p^2 x^2) \frac{dx}{x^2} = \frac{1}{2} e^{-2p} \cos 2p \cdot \sqrt{\pi}$ V. T. 268, N. 13.
- 5) $\int e^{-px^2 - \frac{q^2}{x^2}} \sin\left(\frac{r}{x^2}\right) \frac{dx}{x^2} = \frac{1}{2} e^{-2pq} \sqrt{\frac{\pi}{q^2 + r^2}} \cdot (f \cos 2fp + g \sin 2fp)$ V. T. 268, N. 14.
- 6) $\int e^{-px^2 - \frac{q^2}{x^2}} \cos\left(\frac{r}{x^2}\right) \frac{dx}{x^2} = \frac{1}{2} e^{-2pq} \sqrt{\frac{\pi}{q^2 + r^2}} \cdot (g \cos 2fp - f \sin 2fp)$ V. T. 268, N. 15.
- 7) $\int e^{-\frac{1}{4}q^2 x^2 - \frac{p^2}{x^2} \cos 2\lambda} \sin\left(\frac{p^2}{x^2} \sin 2\lambda\right) \frac{dx}{x^2} = \frac{\sqrt{\pi}}{2p} e^{-pq \cos \lambda} \sin(\lambda + pq \cos \lambda)$ V. T. 268, N. 16.
- 8) $\int e^{-\frac{1}{4}q^2 x^2 - \frac{p^2}{x^2} \cos 2\lambda} \cos\left(\frac{p^2}{x^2} \sin 2\lambda\right) \frac{dx}{x^2} = \frac{\sqrt{\pi}}{2p} e^{-pq \cos \lambda} \cos(\lambda + pq \sin \lambda)$ V. T. 268, N. 17.
- 9) $\int e^{-q\left(x^2 + \frac{1}{x^2}\right)} \sin\left\{s\left(x^2 + \frac{1}{x^2}\right)\right\} \frac{dx}{x^2} = \frac{1}{2} \sqrt{\frac{\pi \cos 2\beta}{q}} \cdot e^{-2p} \sin(\beta + 2Tg 2\beta)$ V. T. 268, N. 20.
- 10) $\int e^{-q\left(x^2 + \frac{1}{x^2}\right)} \cos\left\{s\left(x^2 + \frac{1}{x^2}\right)\right\} \frac{dx}{x^2} = \frac{1}{2} \sqrt{\frac{\pi \cos 2\beta}{q}} \cdot e^{-2p} \cos(\beta + 2Tg 2\beta)$ V. T. 268, N. 21.
- 11) $\int e^{-\left(px^2 + \frac{q}{x^2}\right)} \sin\left(rx^2 + \frac{s}{x^2}\right) \frac{dx}{x^2} = \frac{\sqrt{\pi}}{2a} e^{-2ab \cos(\alpha + \beta)} \sin\{2ab \sin(\alpha + \beta) + \alpha\}$
V. T. 268, N. 22.
- 12) $\int e^{-\left(px^2 + \frac{q}{x^2}\right)} \cos\left(rx^2 + \frac{s}{x^2}\right) \frac{dx}{x^2} = \frac{\sqrt{\pi}}{2a} e^{-2ab \cos(\alpha + \beta)} \cos\{2ab \sin(\alpha + \beta) + \alpha\}$
V. T. 268, N. 23.
- 13) $\int e^{-\left(px^2 + \frac{q}{x^2}\right)} \sin\left(rx^2 - \frac{s}{x^2}\right) \frac{dx}{x^2} = \frac{\sqrt{\pi}}{2a} e^{-2ab \cos(\alpha - \beta)} \sin\{2ab \sin(\beta - \alpha) - \alpha\}$
V. T. 268, N. 24.
- 14) $\int e^{-\left(px^2 + \frac{q}{x^2}\right)} \cos\left(rx^2 - \frac{s}{x^2}\right) \frac{dx}{x^2} = \frac{\sqrt{\pi}}{2a} e^{-2ab \cos(\alpha - \beta)} \cos\{2ab \sin(\alpha - \beta) + \alpha\}$
V. T. 268, N. 25.

$$15) \int e^{-(px^2 + \frac{q}{x^2})} \sin rx^2 \cdot \sin \frac{s}{x^2} \frac{dx}{x^2} = \frac{\sqrt{\pi}}{4a} \left\{ e^{-2ab \cos(\alpha - \beta)} \cos \{2ab \sin(\alpha - \beta) + \alpha\} - \right. \\ \left. - e^{-2ab \cos(\alpha + \beta)} \cos \{2ab \sin(\alpha + \beta) + \alpha\} \right\} \text{ V. T. 268, N. 26.}$$

$$16) \int e^{-(px^2 + \frac{q}{x^2})} \sin rx^2 \cdot \cos \frac{s}{x^2} \frac{dx}{x^2} = \frac{\sqrt{\pi}}{4a} \left\{ e^{-2ab \cos(\alpha + \beta)} \sin \{2ab \sin(\alpha + \beta) + \alpha\} - \right. \\ \left. - e^{-2ab \cos(\alpha - \beta)} \sin \{2ab \sin(\alpha - \beta) + \alpha\} \right\} \text{ V. T. 268, N. 27.}$$

$$17) \int e^{-(px^2 + \frac{q}{x^2})} \cos rx^2 \cdot \sin \frac{s}{x^2} \frac{dx}{x^2} = \frac{\sqrt{\pi}}{4a} \left\{ e^{-2ab \cos(\alpha + \beta)} \sin \{2ab \sin(\alpha + \beta) + \alpha\} + \right. \\ \left. + e^{-2ab \cos(\alpha - \beta)} \sin \{2ab \sin(\alpha - \beta) + \alpha\} \right\} \text{ V. T. 268, N. 28.}$$

$$18) \int e^{-(px^2 + \frac{q}{x^2})} \cos rx^2 \cdot \cos \frac{s}{x^2} \frac{dx}{x^2} = \frac{\sqrt{\pi}}{4a} \left\{ e^{-2ab \cos(\alpha + \beta)} \cos \{2ab \sin(\alpha + \beta) + \alpha\} + \right. \\ \left. + e^{-2ab \cos(\alpha - \beta)} \cos \{2ab \sin(\alpha - \beta) + \alpha\} \right\} \text{ V. T. 268, N. 29.}$$

Dans 6) à 18) on a $a^2 = p^2 + r^2$, $b^2 = q^2 + s^2$, $f = \sqrt{\frac{-p + \sqrt{p^2 + r^2}}{2}}$,

$$g = \sqrt{\frac{p + \sqrt{p^2 + r^2}}{2}}, \quad \alpha = \frac{1}{2} \operatorname{Arctg} \frac{r}{p}, \quad \beta = \frac{1}{2} \operatorname{Arctg} \frac{s}{q}.$$

$$19) \int e^{-x^2} \frac{2x \cos x - \sin x}{x^2} \sin x dx = \frac{e-1}{2e} \sqrt{\pi} \text{ (IV, 509).}$$

$$20) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin (s \sin rx + s_1 \sin r_1 x + \dots) \cdot \sin x \frac{dx}{x^2} = \frac{\pi}{2} (e^{s+s_1+\dots} - 1) \text{ (H, 16).}$$

$$21) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin (s \sin rx + s_1 \sin r_1 x + \dots + px) \cdot \sin x \frac{dx}{x^2} = \frac{\pi}{2} e^{s+s_1+\dots} \text{ (H, 17).}$$

$$22) \int e^{t \cos ux + t_1 \cos u_1 x + \dots} \cos^s rx \cdot \cos^{s_1} r_1 x \dots \sin \{(sr + s_1 r_1 + \dots)x + t \sin ux + t_1 \sin u_1 x + \dots\} \cdot \sin x \frac{dx}{x^2} = \\ = \frac{\pi}{2^{1+s+s_1+\dots}} \{2^{s+s_1+\dots} e^{t+t_1+\dots} - 1\} \text{ (H, 20).}$$

$$23) \int e^{t \cos ux + t_1 \cos u_1 x + \dots} \cos^s rx \cdot \cos^{s_1} r_1 x \dots \sin \{(sr + s_1 r_1 + \dots + p)x + t \sin ux + t_1 \sin u_1 x + \dots\} \cdot$$

$$\sin x \frac{dx}{x^2} = \frac{\pi}{2} e^{t+t_1+\dots} \text{ (H, 23).}$$

F. Alg. rat. fract. à den. x^3 ;

Exp. d'autre forme;

TABLE 369, suite.

Lim. 0 et ∞ .

Circul. Directe.

$$24) \int e^{t \cos u x + t_1 \cos u_1 x + \dots} \sin^s r x \cdot \sin^{s_1} r_1 x \dots \cos^q p x \cdot \cos^{q_1} p_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (q p + q_1 p_1 + \dots + s r + s_1 r_1 + \dots) x - t \sin u x - t_1 \sin u_1 x - \dots \right\} \cdot \sin x \frac{dx}{x^3} =$$

$$= \frac{\pi}{2^{1+q+q_1+\dots+s+s_1+\dots}} (H, 22).$$

$$25) \int e^{t \cos u x + t_1 \cos u_1 x + \dots} \sin^s r x \cdot \sin^{s_1} r_1 x \dots \cos^q p x \cdot \cos^{q_1} p_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (q p + q_1 p_1 + \dots + s r + s_1 r_1 + \dots + w) x - t \sin u x - t_1 \sin u_1 x - \dots \right\} \cdot \sin x \frac{dx}{x^3} = 0$$

(H, 23).

F. Alg. rat. fract. à den. x^3, x^4 ;

Exponentielle;

TABLE 370.

Lim. 0 et ∞ .

Circul. Directe.

$$1) \int e^{-p x} \sin q x \cdot \sin r x \cdot \sin s x \frac{dx}{x^3} = \frac{(q+r+s)^2 - p^2}{8} \operatorname{Arctg} \frac{q+r+s}{p} - \frac{(q-r+s)^2 - p^2}{8} \operatorname{Arctg} \frac{q-r+s}{p} - \frac{(q+r-s)^2 - p^2}{8} \operatorname{Arctg} \frac{q+r-s}{p} + \frac{(q-r-s)^2 - p^2}{8} \operatorname{Arctg} \frac{q-r-s}{p} + \frac{q-r+s}{8} p l \{ p^2 + (q-r+s)^2 \} + \frac{q+r-s}{8} p l \{ p^2 + (q+r-s)^2 \} - \frac{q+r+s}{8} p l \{ p^2 + (q+r+s)^2 \} - \frac{q-r-s}{8} p l \{ p^2 + (q-r-s)^2 \} \quad (\text{VIII, 346}).$$

$$2) \int e^{-p x} \sin^2 q x \cdot \sin r x \frac{dx}{x^3} = \frac{(2q+r)^2 - p^2}{8} \operatorname{Arctg} \frac{2q+r}{p} - \frac{(2q-r)^2 - p^2}{8} \operatorname{Arctg} \frac{2q-r}{p} + \frac{p^2 - r^2}{4} \operatorname{Arctg} \frac{r}{p} + \frac{2q-r}{8} p l \{ p^2 + (2q-r)^2 \} - \frac{2q+r}{8} p l \{ p^2 + (2q+r)^2 \} + \frac{1}{4} p r l \{ p^2 + r^2 \} \quad (\text{VIII, 345}).$$

$$3) \int e^{-p x} \sin^3 q x \frac{dx}{x^3} = \frac{9q^2 - p^2}{8} \operatorname{Arctg} \frac{3q}{p} - 3 \frac{p^2 - q^2}{8} \operatorname{Arctg} \frac{q}{p} + \frac{3pq}{8} l \frac{p^2 + q^2}{p^2 + 9q^2} \quad (\text{VIII, 345}).$$

$$4) \int e^{-p x} \sin^2 q x \cdot \sin r x \cdot \cos s x \frac{dx}{x^3} = \frac{(2q+r+s)^2 - p^2}{16} \operatorname{Arctg} \frac{2q+r+s}{p} - \frac{(2q-r+s)^2 - p^2}{16} \operatorname{Arctg} \frac{2q-r+s}{p} - \frac{(2q+r-s)^2 - p^2}{16} \operatorname{Arctg} \frac{2q+r-s}{p} + \frac{(2q-r-s)^2 - p^2}{16} \operatorname{Arctg} \frac{2q-r-s}{p} + \frac{(2q-r+s)^2 - p^2}{16} \operatorname{Arctg} \frac{2q-r+s}{p} - \frac{(2q+r-s)^2 - p^2}{16} \operatorname{Arctg} \frac{2q+r-s}{p} + \frac{(2q-r-s)^2 - p^2}{16} \operatorname{Arctg} \frac{2q-r-s}{p} + \frac{(2q-r+s)^2 - p^2}{16} \operatorname{Arctg} \frac{2q-r+s}{p}$$

$$\begin{aligned} & \operatorname{Arctg} \frac{2q-r-s}{p} - \frac{(r+s)^2-p^2}{8} \operatorname{Arctg} \frac{r+s}{p} + \frac{(r-s)^2-p^2}{8} \operatorname{Arctg} \frac{r-s}{p} - \\ & - \frac{2q+r+s}{16} p l \{p^2 + (2q+r+s)^2\} + \frac{2q-r+s}{16} p l \{p^2 + (2q-r+s)^2\} + \\ & + \frac{2q+r-s}{16} p l \{p^2 + (2q+r-s)^2\} - \frac{2q-r-s}{16} p l \{p^2 + (2q-r-s)^2\} + \\ & + \frac{r+s}{8} p l \{p^2 + (r+s)^2\} - \frac{r-s}{8} p l \{p^2 + (r-s)^2\} \end{aligned}$$

$$\begin{aligned} 5) \int e^{-px} \operatorname{Sin}^3 qx \cdot \operatorname{Cos} rx \frac{dx}{x^3} &= \frac{(3q+r)^2-p^2}{16} \operatorname{Arctg} \frac{3q+r}{p} + \frac{(3q-r)^2-p^2}{16} \operatorname{Arctg} \frac{3q-r}{p} - \\ &- 3 \frac{(q+r)^2-p^2}{16} \operatorname{Arctg} \frac{q+r}{p} - 3 \frac{(q-r)^2-p^2}{16} \operatorname{Arctg} \frac{q-r}{p} - \frac{3q+r}{16} p l \{p^2 + (3q+r)^2\} - \\ &- \frac{3q-r}{16} p l \{p^2 + (3q-r)^2\} + \frac{q+r}{16} 3 p l \{p^2 + (q+r)^2\} + \frac{q-r}{16} 3 p l \{p^2 + (q-r)^2\} \end{aligned}$$

$$\begin{aligned} 6) \int e^{-px} \operatorname{Sin}^4 qx \frac{dx}{x^3} &= \frac{1}{2} p q \operatorname{Arctg} \frac{4q}{p} - p q \operatorname{Arctg} \frac{2q}{p} - \frac{p^2-16q^2}{32} l(p^2+16q^2) + \\ &+ \frac{p^2-4q^2}{8} l(p^2+4q^2) - \frac{3p^2}{16} l p \end{aligned}$$

$$\begin{aligned} 7) \int e^{-px} \operatorname{Sin}^3 qx \cdot \operatorname{Sin}^2 rx \cdot \operatorname{Sin} sx \frac{dx}{x^3} &= \frac{(2q-2r-s)^2-p^2}{32} \operatorname{Arctg} \frac{2q-2r-s}{p} + \frac{(2q+2r-s)^2-p^2}{32} \\ &\operatorname{Arctg} \frac{2q+2r-s}{p} - \frac{(2q-2r+s)^2-p^2}{32} \operatorname{Arctg} \frac{2q-2r+s}{p} - \frac{(2q+2r+s)^2-p^2}{32} \\ &\operatorname{Arctg} \frac{2q+2r+s}{p} + \frac{(2q+s)^2-p^2}{16} \operatorname{Arctg} \frac{2q+s}{p} - \frac{(2q-s)^2-p^2}{16} \operatorname{Arctg} \frac{2q-s}{p} + \\ &+ \frac{(2r+s)^2-p^2}{16} \operatorname{Arctg} \frac{2r+s}{p} - \frac{(2r-s)^2-p^2}{16} \operatorname{Arctg} \frac{2r-s}{p} + \frac{p^2-s^2}{8} \operatorname{Arctg} \frac{s}{p} + \\ &+ \frac{2q+2r+s}{32} p l \{p^2 + (2q+2r+s)^2\} + \frac{2q-2r+s}{32} p l \{p^2 + (2q-2r+s)^2\} - \\ &- \frac{2q+2r-s}{32} p l \{p^2 + (2q+2r-s)^2\} - \frac{2q-2r-s}{32} p l \{p^2 + (2q-2r-s)^2\} - \\ &- \frac{2q+s}{16} p l \{p^2 + (2q+s)^2\} + \frac{2q-s}{16} p l \{p^2 + (2q-s)^2\} - \frac{2r+s}{16} p l \{p^2 + (2r+s)^2\} + \\ &+ \frac{2r-s}{16} p l \{p^2 + (2r-s)^2\} + \frac{1}{8} p s l(p^2+s^2) \end{aligned}$$

$$8) \int e^{-px} \sin^2 qx \cdot \sin^2 rx \frac{dx}{x^3} = 3 \frac{(2q+r)^2 - p^2}{32} \operatorname{Arctg} \frac{2q+r}{p} - 3 \frac{(2q-r)^2 - p^2}{32} \operatorname{Arctg} \frac{2q-r}{p} - \\ - \frac{(2q+3r)^2 - p^2}{32} \operatorname{Arctg} \frac{2q+3r}{p} + \frac{(2q-3r)^2 - p^2}{32} \operatorname{Arctg} \frac{2q-3r}{p} + \frac{9r^2 - p^2}{16} \\ \operatorname{Arctg} \frac{3r}{p} + 3 \frac{p^2 - r^2}{16} \operatorname{Arctg} \frac{r}{p} + \frac{2q+3r}{32} p l\{p^2 + (2q+3r)^2\} - \frac{2q-3r}{32} p \\ l\{p^2 + (2q-3r)^2\} - \frac{2q+r}{32} 3p l\{p^2 + (2q+r)^2\} + \frac{2q-r}{32} 3p l\{p^2 + (2q-r)^2\} + \\ + \frac{3}{16} pr l \frac{p^2 + r^2}{p^2 + 9r^2}$$

$$9) \int e^{-px} \sin^2 qx \cdot \cos^2 rx \frac{dx}{x^3} = \frac{(3q+2r)^2 - p^2}{32} \operatorname{Arctg} \frac{3q+2r}{p} + \frac{(3q-2r)^2 - p^2}{32} \operatorname{Arctg} \frac{3q-2r}{p} - \\ - 3 \frac{(q+2r)^2 - p^2}{32} \operatorname{Arctg} \frac{q+2r}{p} - 3 \frac{(q-2r)^2 - p^2}{32} \operatorname{Arctg} \frac{q-2r}{p} + \frac{9q^2 - p^2}{16} \operatorname{Arctg} \frac{3q}{p} + \\ + 3 \frac{p^2 - q^2}{16} \operatorname{Arctg} \frac{q}{p} - \frac{3q+2r}{32} p l\{p^2 + (3q+2r)^2\} - \frac{3q-2r}{32} p l\{p^2 + (3q-2r)^2\} + \\ + \frac{q+2r}{32} 3p l\{p^2 + (q+2r)^2\} + \frac{q-2r}{32} 3p l\{p^2 + (q-2r)^2\} + \frac{3}{16} pq l \frac{p^2 + q^2}{p^2 + 9q^2}$$

$$10) \int e^{-px} \sin^2 qx \frac{dx}{x^3} = 5 \frac{p^2 - q^2}{16} \operatorname{Arctg} \frac{q}{p} + 5 \frac{9q^2 - p^2}{32} \operatorname{Arctg} \frac{3q}{p} - \frac{25q^2 - p^2}{32} \operatorname{Arctg} \frac{5q}{p} + \\ + \frac{5pq}{16} l(p^2 + q^2) - \frac{15pq}{32} l(p^2 + 9q^2) + \frac{5pq}{32} l(p^2 + 25q^2)$$

Sur 4) à 10) voyez E. O. A.

$$11) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin(s \sin rx + s_1 \sin r_1 x + \dots) \sin^2 x \frac{dx}{x^3} = \frac{\pi}{2} \left\{ e^{s+s_1+\dots} - 1 - \frac{1}{4}(s+s_1+\dots) \right\} \\ (H, 16).$$

$$12) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin(s \sin rx + s_1 \sin r_1 x + \dots + px) \sin^2 x \frac{dx}{x^3} = \frac{\pi}{2} \left\{ e^{s+s_1+\dots} - \frac{1}{4} \right\} \\ (H, 17).$$

$$13) \int e^{t \cos ux + t_1 \cos u_1 x + \dots} \cos^2 rx \cdot \cos^2 r_1 x \dots \sin\{(sr + s_1 r_1 + \dots)x + t \sin ux + t_1 \sin u_1 x + \dots\} \cdot \\ \sin^2 x \frac{dx}{x^3} = \frac{\pi}{2^{s+s_1+\dots}} \left\{ 2^{s+s_1+\dots} e^{t+t_1+\dots} - 1 - \frac{1}{4}(s+s_1+\dots+t+t_1+\dots) \right\} (H, 20).$$

$$14) \int e^{t \cos ux + t_1 \cos u_1 x + \dots} \cos^2 rx \cdot \cos^2 r_1 x \dots \sin\{(sr + s_1 r_1 + \dots + p)x + t \sin ux + t_1 \sin u_1 x + \dots\} \cdot \\ \sin^2 x \frac{dx}{x^3} = \frac{\pi}{2^{s+s_1+\dots}} \left\{ 2^{s+s_1+\dots} e^{t+t_1+\dots} - 1 \right\} (H, 23).$$

F. Alg. rat. fract. à dén. x^3, x^4 ;

Exponentielle;

TABLE 370, suite.

Lim. 0 et ∞ .

Circul. Directe.

$$15) \int e^{t \cos u x + t_1 \cos u_1 x + \dots} \sin^s r x \cdot \sin^{s_1} r_1 x \dots \cos^q p x \cdot \cos^{q_1} p_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (q p + q_1 p_1 + \dots + s r + s_1 r_1 + \dots) x - t \sin u x - t_1 \sin u_1 x - \dots \right\} \sin^2 x \frac{dx}{x^3} =$$

$$= \frac{\pi}{2^{s+q+q_1+\dots+s+s_1+\dots}} \{4 + q + q_1 + \dots + s + s_1 + \dots + t + t_1 + \dots\} \quad (\text{H}, 22).$$

$$16) \int e^{t \cos u x + t_1 \cos u_1 x + \dots} \sin^s r x \cdot \sin^{s_1} r_1 x \dots \cos^q p x \cdot \cos^{q_1} p_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (q p + q_1 p_1 + \dots + s r + s_1 r_1 + \dots + w) x - t \sin u x - t_1 \sin u_1 x - \dots \right\} \sin^2 x \frac{dx}{x^3} =$$

$$= \frac{\pi}{2^{s+q+q_1+\dots+s+s_1+\dots}} \quad (\text{H}, 24).$$

$$17) \int e^{-p x} \sin^4 q x \frac{dx}{x^4} = \frac{16 q^3 - 3 p^3 q}{12} \operatorname{Arctg} \frac{4 q}{p} - \frac{4 q^3 - 3 p^3 q}{6} \operatorname{Arctg} \frac{2 q}{p} - \frac{48 p q^3 - p^3}{96}$$

$$l(p^3 + 16 q^3) + \frac{12 p q^3 - p^3}{24} l(p^3 + 4 q^3) + \frac{1}{16} p^3 l p \quad (\text{E. O. A}).$$

F. Alg. rat. fract. à dén. x^p ;

Exponentielle;

TABLE 371.

Lim. 0 et ∞ .

Circul. Directe.

$$1) \int e^{-q x} \sin r x \frac{dx}{x^p} = \frac{\Gamma(1-p)}{(q^2 + r^2)^{\frac{1}{2}(1-p)}} \sin \left\{ (1-p) \operatorname{Arctg} \frac{r}{q} \right\} [p < 1] \quad (\text{VIII}, 440^*).$$

$$2) \int e^{-q x} \cos r x \frac{dx}{x^p} = \frac{\Gamma(1-p)}{(q^2 + r^2)^{\frac{1}{2}(1-p)}} \cos \left\{ (1-p) \operatorname{Arctg} \frac{r}{q} \right\} [p < 1] \quad (\text{VIII}, 440^*).$$

$$3) \int e^{-q x} \sin \left\{ r \left(\frac{\pi}{2} + x \right) \right\} \frac{dx}{x^p} = \frac{\pi}{\Gamma(p)} \frac{(q^2 + r^2)^{\frac{1}{2}(p-1)}}{\sin p \pi} \sin \left\{ \frac{1}{2} p \pi + (1-p) \operatorname{Arctg} \frac{r}{q} \right\} [p < 1]$$

(VIII, 540).

$$4) \int e^{-q x} \cos \left\{ r \left(\frac{\pi}{2} + x \right) \right\} \frac{dx}{x^p} = \frac{\pi}{\Gamma(p)} \frac{(q^2 + r^2)^{\frac{1}{2}(p-1)}}{\sin p \pi} \cos \left\{ \frac{1}{2} p \pi + (1-p) \operatorname{Arctg} \frac{r}{q} \right\} [p < 1]$$

(VIII, 540).

$$5) \int e^{-p x} \sin q_0 x \cdot \sin q_1 x \dots \sin q_a x \cdot \frac{dx}{x^{a+1}} = \frac{1}{2^a 1^{a!}} (cy - p)^a \quad (\text{VIII}, 346).$$

Où toutes les puissances $a, a-2, a-4, \dots$ de y doivent être remplacées par $\operatorname{Arctg} \frac{c}{p}$;

les autres puissances, $a-1, a-3, \dots$ au contraire par $\frac{1}{2} l(p^2 + c^2)$. Pour c il faut mettre successivement toutes les sommes possibles des $a+1$ éléments q_0, q_1, \dots, q_a , en employant le signe $-$ tout aussi bien que le signe $+$. (VIII, 346).

F. Alg. rat. fract. à dén. x^p ;

Exponentielle;

TABLE 371, suite.

Lim. 0 et ∞ .

Circul. Directe.

$$6) \int (e^{-px} \sin qx - e^{-rx} \sin sx) \frac{dx}{x^{t+1}} = \frac{\Gamma(1-t)}{t} \left\{ (p^2 + q^2)^{\frac{1}{2}t} \sin \left(t \operatorname{Arctg} \frac{q}{p} \right) - \right. \\ \left. - (r^2 + s^2)^{\frac{1}{2}t} \sin \left(t \operatorname{Arctg} \frac{s}{r} \right) \right\} \quad (\text{IV, 509}).$$

$$7) \int (e^{-px} \cos qx - e^{-rx} \cos sx) \frac{dx}{x^{t+1}} = \frac{\Gamma(1-t)}{t} \left\{ (r^2 + s^2)^{\frac{1}{2}t} \cos \left(t \operatorname{Arctg} \frac{s}{r} \right) - \right. \\ \left. - (p^2 + q^2)^{\frac{1}{2}t} \cos \left(t \operatorname{Arctg} \frac{q}{p} \right) \right\} \quad (\text{IV, 509}).$$

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Exponentielle monôme;

TABLE 372.

Lim. 0 et ∞ .

Circ. Dir. à un ou deux facteurs.

$$1) \int e^{r \cos sx} \sin(r \sin sx) \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} (e^{r e^{-qs}} - 1) \quad (\text{VIII, 498}).$$

$$2) \int e^{r \cos sx} \cos(r \sin sx) \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} e^{r e^{-qs}} \quad (\text{VIII, 497}).$$

$$3) \int e^{r \cos sx} \sin(r \sin sx + px) \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} e^{-pq + r e^{-qs}} \quad (\text{VIII, 498}).$$

$$4) \int e^{r \cos sx} \cos(r \sin sx + px) \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} e^{-pq + r e^{-qs}} \quad (\text{VIII, 498}).$$

$$5) \int e^{r \cos sx} \sin \left(\frac{1}{2} \alpha \pi - \sin sx \right) \frac{x^{\alpha-1}}{q^2 + x^2} dx = \frac{\pi}{2q} q^{\alpha-1} e^{e^{-qs}} \quad (\text{IV, 509}).$$

$$6) \int e^{r \cos sx} \sin(r \sin sx) \cdot \sin px \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} (e^{pq} - e^{-pq}) e^{r e^{-qs}} - \frac{\pi}{4q} e^{pq} \sum_0^d \frac{r^n}{1^{n/1}} e^{-nqs} + \\ + \frac{\pi}{4q} e^{-pq} \sum_0^d \frac{r^n}{1^{n/1}} e^{nqs} \quad (\text{VIII, 498}).$$

$$7) \int e^{r \cos sx} \sin(r \sin sx) \cdot \cos px \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} (e^{pq} + e^{-pq}) e^{r e^{-qs}} - \frac{\pi}{4} e^{pq} \sum_0^d \frac{r^n}{1^{n/1}} e^{-nqs} - \\ - \frac{\pi}{4} e^{-pq} \sum_0^d \frac{r^n}{1^{n/1}} e^{nqs} \left[\frac{p}{s} \text{fractionn.} \right], = \frac{\pi}{4} (e^{pq} + e^{-pq}) e^{r e^{-qs}} - \frac{\pi}{4} e^{pq} \sum_0^{d-1} \frac{r^n}{1^{n/1}} e^{-nqs} - \\ - \frac{\pi}{4} e^{-pq} \sum_0^d \frac{1^{n/1}}{r^n} e^{nqs} \left[\frac{p}{s} \text{entier} \right] \quad (\text{VIII, 498}).$$

$$8) \int e^{r \cos sx} \cos(r \sin sx) \cdot \sin px \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} (e^{-pq} - e^{pq}) e^{r e^{-qs}} + \frac{\pi}{4} e^{pq} \sum_0^d \frac{r^n}{1^{n/1}} e^{-nqs} +$$

$$+ \frac{\pi}{4} e^{-pq} \sum_0^d \frac{r^n}{1^{n/1}} e^{nqs} \left[\frac{p}{s} \text{ fractionn.} \right], = \frac{\pi}{4} (e^{-pq} - e^{pq}) e^{r e^{-qs}} + \frac{\pi}{4} e^{pq} \sum_0^{d-1} \frac{r^n}{1^{n/1}} e^{-nqs} +$$

$$+ \frac{\pi}{4} e^{-pq} \sum_0^d \frac{r^n}{1^{n/1}} e^{nqs} \left[\frac{p}{s} \text{ entier} \right] \text{ (VIII, 497).}$$

$$9) \int e^{r \cos sx} \cos(r \sin sx) \cdot \cos px \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} (e^{pq} + e^{-pq}) e^{r e^{-qs}} - \frac{\pi}{4q} e^{pq} \sum_0^d \frac{r^n}{1^{n/1}} e^{-nqs} +$$

$$+ \frac{\pi}{4q} e^{-pq} \sum_0^d \frac{r^n}{1^{n/1}} e^{nqs} \text{ (VIII, 497).}$$

[Dans 5) à 7) on a $d = \mathcal{L} \frac{p}{s}$]

$$10) \int e^{r \cos sx} \sin(r \sin sx) \cdot \sin^{2a} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} (e^q - e^{-q})^{2a} (e^{r e^{-qs}} - 1) [s > 2a], =$$

$$= \frac{(-1)^a \pi}{2^{2a+1}} \{ (e^q - e^{-q})^{2a} (e^{r e^{-qs}} - 1) - r \} [s = 2a] \text{ (V, 91).}$$

$$11) \int e^{r \cos sx} \cos(r \sin sx) \cdot \sin^{2a+1} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1}} \left[e^{-(2a+1)q} \{ (1 - e^{(2a+1)2q}) \right.$$

$$\left. (1 - e^{-2q})^{2a+1} - 2 \sum_0^a (-1)^n \binom{2a+1}{n} e^{2nq} \} + (e^q - e^{-q})^{2a+1} (e^{r e^{-qs}} - 1) \right]$$

$$[s > 2a+1], = \frac{(-1)^{a-1} \pi}{2^{2a+1}} \left[e^{-(2a+1)q} \{ (1 - e^{(2a+1)2q}) (1 - e^{-2q})^{2a+1} - \right.$$

$$\left. - 2 \sum_0^a (-1)^n \binom{2a+1}{n} e^{2nq} \} + (e^q - e^{-q})^{2a+1} (e^{r e^{-(2a+1)q}} - 1) - r \right] [s = 2a+1] \text{ (V, 92).}$$

$$12) \int e^{r \cos sx} \cos(r \sin sx) \cdot \cos^{2a} x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{2a+1} q} \left\{ \binom{2a}{a} + 2 \sum_1^a \binom{2a}{n+a} e^{-2nq} + \right.$$

$$\left. + (e^q + e^{-q})^{2a} (e^{r e^{-qs}} - 1) \right\} [s \geq 2a] \text{ (V, 91).}$$

$$13) \int e^{r \cos sx} \cos(r \sin sx) \cdot \cos^{2a+1} x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{2a+1} q} \left\{ 2 \sum_0^a \binom{2a+1}{n+a+1} e^{-(2n+1)q} + \right.$$

$$\left. + (e^q + e^{-q})^{2a+1} (e^{r e^{-qs}} - 1) \right\} [s \geq 2a+1] \text{ (V, 91).}$$

$$14) \int e^{r \cos sx} \sin(r \sin sx) \cdot \operatorname{Tg} sx \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} \frac{1 - e^{-2qs}}{1 + e^{-2qs}} (e^{r e^{-qs}} - e^r) \text{ (H, 154).}$$

$$15) \int e^{r \cos sx} \sin(r \sin sx) \cdot \operatorname{Cot} sx \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} \frac{1 + e^{-2qs}}{1 - e^{-2qs}} (e^r - e^{r e^{-qs}}) \text{ (H, 154).}$$

$$16) \int e^{r \cos sx} \sin(r \sin sx + sx) \cdot \operatorname{Tg} sx \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} \frac{1 - e^{-2qs}}{1 + e^{-2qs}} (e^{r e^{-qs} - qs} - e^r) \text{ (II, 155).}$$

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Exponentielle monôme;

TABLE 372, suite.

Lim. 0 et ∞ .

Circ. Dir. à un ou deux facteurs.

$$17) \int e^{r \cos s x} \sin(r \sin s x + s x) \cdot \cot s x \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} \frac{1 + e^{-2qs}}{1 - e^{-2qs}} (e^r - e^{r e^{-qs} - qs}) \quad (\text{H, 155}).$$

$$18) \int e^{r \cos s x} \cos(r \sin s x + s x) \cdot \text{Tg} s x \frac{x dx}{q^2 + x^2} = -\pi \frac{e^{r-2qs}}{1 + e^{-2qs}} - \frac{\pi}{2} \frac{1 - e^{-2qs}}{1 + e^{-2qs}} e^{r e^{-qs} - qs} \quad (\text{II, 155}).$$

$$19) \int e^{r \cos s x} \cos(r \sin s x + s x) \cdot \cot s x \frac{x dx}{q^2 + x^2} = -\pi \frac{e^{r-2qs}}{1 - e^{-2qs}} + \frac{\pi}{2} \frac{1 + e^{-2qs}}{1 - e^{-2qs}} e^{r e^{-qs} - qs} \quad (\text{H, 155}).$$

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Exponentielle monôme;

TABLE 373.

Lim. 0 et ∞ .

Circ. Dir. à trois ou quatre fact.

$$1) \int e^{r \cos s x} \sin(r \sin s x) \cdot \sin p x \cdot \sin^{2a+1} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1}} (e^q - e^{-q})^{2a+1} (e^{pq} - e^{-pq}) (e^{r e^{-qs}} - 1) [p < s - 2a - 1], = \frac{(-1)^{a-1} \pi}{2^{2a+1}} \{ (e^q - e^{-q})^{2a+1} (e^{pq} - e^{-pq}) (e^{r e^{-qs}} - 1) - r \} [p = s - 2a - 1] \quad (\text{V, 94}).$$

$$2) \int e^{r \cos s x} \cos(r \sin s x) \cdot \sin p x \cdot \sin^{2a} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} (e^q - e^{-q})^{2a} \{ 2e^{-pq} - (e^{pq} - e^{-pq}) (e^{r e^{-qs}} - 1) \} [2p > 4a < s], = \frac{(-1)^a \pi}{2^{2a+1}} \left[(e^q - e^{-q})^{2a} \{ 2e^{-pq} - (e^{pq} - e^{-pq}) (e^{r e^{-qs}} - 1) \} - 2e^{(2a-p)q} \sum_0^{d-1} (-1)^n \binom{2a}{n} e^{-2nq} - 2e^{(p-2a)q} \sum_0^d (-1)^n \binom{2a}{n} e^{2nq} \right] [s > 2p < 4a, p \text{ ent.}], = \frac{(-1)^a \pi}{2^{2a+1}} \left[(e^q - e^{-q})^{2a} \{ 2e^{-pq} - (e^{pq} - e^{-pq}) (e^{r e^{-qs}} - 1) \} - 2e^{(2a-p)q} \sum_0^d (-1)^n \binom{2a}{n} e^{-2nq} - 2e^{(p-2a)q} \sum_0^d (-1)^n \binom{2a}{n} e^{2nq} \right] [s > 2p < 4a, p \text{ fractionn.}], = \frac{(-1)^a \pi}{2^{2a+1}} \left[(e^q - e^{-q})^{2a} \{ 2e^{-pq} - (e^{pq} - e^{-pq}) (e^{r e^{-qs}} - 1) \} + r \right] [2s - 4a = 2p > s > 4a], = \frac{(-1)^a \pi}{2^{2a+1}} \left[(e^q - e^{-q})^{2a} \{ 2e^{-pq} - (e^{pq} - e^{-pq}) (e^{r e^{-qs}} - 1) \} + r - 2e^{(2a-p)q} \sum_0^{d-1} (-1)^n \binom{2a}{n} e^{-2nq} - 2e^{(p-2a)q} \sum_0^d (-1)^n \binom{2a}{n} e^{2nq} \right] [2s - 4a = 2p < s < 4a, p \text{ entier}], = \frac{(-1)^a \pi}{2^{2a+1}} \left[(e^q - e^{-q})^{2a} \{ 2e^{-pq} - (e^{pq} - e^{-pq}) (e^{r e^{-qs}} - 1) \} + r - 2e^{(2a-p)q} \sum_0^d (-1)^n \binom{2a}{n} e^{-2nq} - 2e^{(p-2a)q} \sum_0^d (-1)^n \binom{2a}{n} e^{2nq} \right] [2s - 4a = 2p < s < 4a, p \text{ fractionn.}] \left[d = \mathcal{L} \left(a - \frac{1}{2} p \right) \right] \quad (\text{V, 98}).$$

F. Alg. rat. fract. à dén $q^2 + x^2$;

Exponentielle monôme;

TABLE 373, suite.

Lim. 0 et ∞ .

Circ. Dir. à trois ou quatre fact.

$$3) \int e^{r \cos sx} \sin(r \sin sx) \cdot \cos px \cdot \sin^{2a} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} (e^q - e^{-q})^{2a} (e^{pq} + e^{-pq}) (e^{r e^{-q}} - 1) \\ [p < s - 2a], = \frac{(-1)^a \pi}{2^{2a+1}} \{ (e^q - e^{-q})^{2a} (e^{pq} + e^{-pq}) (e^{r e^{-q}} - 1) - r \} [p = s - 2a] \\ (\text{V}, 93).$$

$$4) \int e^{r \cos sx} \sin(r \sin sx) \cdot \sin px \cdot \cos^a x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{2a+1} q} (e^q + e^{-q})^a (e^{pq} - e^{-pq}) (e^{r e^{-q}} - 1) \\ [p \leq s - a] (\text{V}, 92).$$

$$5) \int e^{r \cos sx} \cos(r \sin sx) \cdot \cos px \cdot \sin^{2a+1} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1}} (e^q - e^{-q})^{2a+1} \{ 2 e^{-pq} + \\ + (e^{pq} + e^{-pq}) (e^{r e^{-q}} - 1) \} [2p > 4a + 2 > s], = \frac{(-1)^{a-1} \pi}{2^{2a+1}} \left[(e^q - e^{-q})^{2a+1} \{ 2 e^{-pq} + \right. \\ \left. + (e^{pq} + e^{-pq}) (e^{r e^{-q}} - 1) \} - 2 e^{(2a+1-p)q} \sum_0^{d-1} (-1)^n \binom{2a+1}{n} e^{-2nq} - 2 e^{(p-2a-1)q} \right. \\ \left. \sum_0^d (-1)^n \binom{2a+1}{n} e^{2nq} \right] [s > 2p < 4a + 2, p \text{ entier}], = \frac{(-1)^{a-1} \pi}{2^{2a+1}} \left[(e^q - e^{-q})^{2a+1} \{ 2 e^{-pq} + \right. \\ \left. + (e^{pq} + e^{-pq}) (e^{r e^{-q}} - 1) \} - 2 e^{(2a+1-p)q} \sum_0^d (-1)^n \binom{2a+1}{n} e^{-2nq} - 2 e^{(p-2a-1)q} \right. \\ \left. \sum_0^d (-1)^n \binom{2a+1}{n} e^{2nq} \right] [s > 2p < 4a + 2, p \text{ fractionn.}], = \frac{(-1)^{a-1} \pi}{2^{2a+1}} \left[(e^q - e^{-q})^{2a+1} \{ 2 e^{-pq} + \right. \\ \left. + (e^{pq} + e^{-pq}) (e^{r e^{-q}} - 1) \} - r \right] [2s - 4a - 2 = 2p > s > 4a + 2], = \frac{(-1)^{a-1} \pi}{2^{2a+1}} \\ \left[(e^q - e^{-q})^{2a+1} \{ 2 e^{-pq} + (e^{pq} + e^{-pq}) (e^{r e^{-q}} - 1) \} - r - 2 e^{(2a+1-p)q} \sum_0^{d-1} (-1)^n \right. \\ \left. \binom{2a+1}{n} e^{-2nq} - 2 e^{(p-2a-1)q} \sum_0^d (-1)^n \binom{2a+1}{n} e^{2nq} \right] [2s - 4a - 2 = 2p < s < 4a + 2, \\ p \text{ entier}], = \frac{(-1)^{a-1} \pi}{2^{2a+1}} \left[(e^q - e^{-q})^{2a+1} \{ 2 e^{-pq} + (e^{pq} + e^{-pq}) (e^{r e^{-q}} - 1) \} - r - \right. \\ \left. - 2 e^{(2a+1-p)q} \sum_0^d (-1)^n \binom{2a+1}{n} e^{-2nq} - 2 e^{(p-2a-1)q} \sum_0^d (-1)^n \binom{2a+1}{n} e^{2nq} \right] [2s - 4a - 2 = \\ = 2p < s < 4a + 2, p \text{ fractionn.}] \left[d = \mathcal{L} \frac{1}{2} (2a + 1 - p) \right] (\text{V}, 94).$$

$$6) \int e^{r \cos s x} \cos(r \sin s x) \cdot \cos p x \cdot \cos^a x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{a+1} q} (e^q + e^{-q})^a \{ 2 e^{-p q} + (e^{p q} + e^{-p q}) (e^{r e^{-q s}} - 1) \} [2p \geq 2a \leq s], = \frac{\pi}{2^{a+1} q} \left[2 \left\{ (e^q + e^{-q})^a e^{-p q} - e^{(a-p)q} \sum_0^d \binom{a}{n} e^{-2nq} + e^{(p-a)q} \sum_0^d \binom{a}{n} e^{2nq} \right\} + (e^q + e^{-q})^a (e^{p q} + e^{-p q}) (e^{r e^{-q s}} - 1) \right] [2a > 2p \leq s] \\ \left[d = \mathcal{L} \frac{1}{2} (a-p) \right] \text{ (V, 92).}$$

$$7) \int e^{t \cos 2 s x} \sin^{r-1} s x \cdot \cos^{p-1} s x \cdot \sin \left\{ \frac{1}{2} r \pi - (p+r+2) s x - t \sin 2 s x \right\} \frac{dx}{q^2 + x^2} = \\ = \frac{-\pi e^{-t q s}}{2^{p+r-1} q} (1 + e^{-2 q s})^{p-1} (1 - e^{-2 q s})^{r-1} e^{t e^{-2 q s}} \text{ (H, 167).}$$

$$8) \int e^{t \cos 2 s x} \sin^{r-1} s x \cdot \cos^{p-1} s x \cdot \cos \left\{ \frac{1}{2} r \pi - (p+r+2) s x - t \sin 2 s x \right\} \frac{x dx}{q^2 + x^2} = \\ = \frac{\pi e^{-t q s}}{2^{p+r-1}} (1 + e^{-2 q s})^{p-1} (1 - e^{-2 q s})^{r-1} e^{t e^{-2 q s}} \text{ (H, 167).}$$

$$9) \int e^{t \cos 2 s x} \cos^r s x \cdot \sin(s r x + t \sin 2 s x) \cdot \operatorname{Tg} 2 s x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{r+1} q} \frac{1 - e^{-t q s}}{1 + e^{-t q s}} \\ \{ (1 + e^{-2 q s})^r e^{t e^{-2 q s}} - 2^r e^t \} \text{ (H, 158).}$$

$$10) \int e^{t \cos 2 s x} \cos^r s x \cdot \sin(s r x + t \sin 2 s x) \cdot \operatorname{Cot} 2 s x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{r+1} q} \frac{1 + e^{-t q s}}{1 - e^{-t q s}} \\ \{ 2^r e^t - (1 + e^{-2 q s})^r e^{t e^{-2 q s}} \} \text{ (H, 158).}$$

$$11) \int e^{t \cos 2 s x} \sin^{r-1} s x \cdot \cos^{p-1} s x \cdot \sin \left\{ \frac{1}{2} r \pi - (p+r) s x - t \sin 2 s x \right\} \frac{dx}{q^2 + x^2} = \\ = \frac{\pi e^{-t q s}}{2^{p+r-1} q} (1 + e^{-2 q s})^{p-1} (1 - e^{-2 q s})^{r-1} e^{t e^{-2 q s}} \text{ (H, 160).}$$

$$12) \int e^{t \cos 2 s x} \sin^{r-1} s x \cdot \cos^{p-1} s x \cdot \cos \left\{ \frac{1}{2} r \pi - (p+r) s x - t \sin 2 s x \right\} \frac{x dx}{q^2 + x^2} = \\ = \frac{\pi e^{-t q s}}{2^{p+r-1}} (1 + e^{-2 q s})^{p-1} (1 - e^{-2 q s})^{r-1} e^{t e^{-2 q s}} \text{ (H, 160).}$$

$$13) \int e^{t \cos 2 s x} \cos^r s x \cdot \sin \{ (r+2) s x + t \sin 2 s x \} \cdot \operatorname{Tg} 2 s x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{r+1} q} \frac{1 - e^{-t q s}}{1 + e^{-t q s}} \\ \{ (1 + e^{-2 q s})^r e^{t e^{-2 q s} - 2 q s} - 2^r e^t \} \text{ (H, 164).}$$

$$14) \int e^{t \cos 2 s x} \cos^r s x \cdot \sin \{ (r+2) s x + t \sin 2 s x \} \cdot \operatorname{Cot} 2 s x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{r+1} q} \frac{1 + e^{-t q s}}{1 - e^{-t q s}} \\ \{ 2^r e^t - (1 + e^{-2 q s})^r e^{t e^{-2 q s} - 2 q s} \} \text{ (H, 164).}$$

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Exponentielle monôme;

TABLE 373, suite.

Lim. 0 et ∞ .

Circ. Dir. à trois ou quatre fact.

$$15) \int e^{t \cos 2sx} \cos^r sx \cdot \cos \{(r+2)sx + t \sin 2sx\} \cdot \operatorname{Tg} 2sx \frac{x dx}{q^2 + x^2} = - \frac{\pi}{1 + e^{-tqs}} \\ \{e^{t(-1)qs} + 2^{-r-1} (1 - e^{-2qs}) (1 + e^{-2qs})^{r+1} e^{t(-2)qs - 2qs}\} \quad (\text{H, 164}).$$

$$16) \int e^{t \cos 2sx} \cos^r sx \cdot \cos \{(r+2)sx + t \sin 2sx\} \cdot \operatorname{Cot} 2sx \frac{x dx}{q^2 + x^2} = \frac{\pi}{1 - e^{-tqs}} \\ \{-e^{t(-1)qs} + 2^{-r-1} (1 + e^{-1qs}) (1 + e^{-2qs})^r e^{t(-2)qs - 2qs}\} \quad (\text{H, 164}).$$

$$17) \int e^{t \cos 2sx} \sin^r sx \cdot \cos^p sx \cdot \sin \left\{ \frac{1}{2} r\pi - (p+r)sx - t \sin 2sx \right\} \cdot \operatorname{Tg} 2sx \frac{dx}{q^2 + x^2} = \\ = \frac{-\pi}{2^{p+r+1} q} \frac{1}{1 + e^{-tqs}} (1 + e^{-2qs})^{p+1} (1 - e^{-2qs})^{r+1} e^{t(-2)qs} \quad (\text{H, 160}).$$

$$18) \int e^{t \cos 2sx} \sin^r sx \cdot \cos^p sx \cdot \sin \left\{ \frac{1}{2} r\pi - (p+r)sx - t \sin 2sx \right\} \cdot \operatorname{Cot} 2sx \frac{dx}{q^2 + x^2} = \\ = \frac{\pi}{2^{p+r+1} q} (1 + e^{-1qs}) (1 + e^{-2qs})^{p-1} (1 - e^{-2qs})^{r-1} e^{t(-2)qs} \quad (\text{H, 160}).$$

$$19) \int e^{t \cos 2sx} \sin^r sx \cdot \cos^p sx \cdot \cos \left\{ \frac{1}{2} r\pi - (p+r)sx - t \sin 2sx \right\} \cdot \operatorname{Tg} 2sx \frac{x dx}{q^2 + x^2} = \\ = \frac{-\pi}{2^{p+r+1}} \frac{1}{1 + e^{-tqs}} (1 + e^{-2qs})^{p+1} (1 - e^{-2qs})^{r+1} e^{t(-2)qs} \quad (\text{H, 160}).$$

$$20) \int e^{t \cos 2sx} \sin^r sx \cdot \cos^p sx \cdot \cos \left\{ \frac{1}{2} r\pi - (p+r)sx - t \sin 2sx \right\} \cdot \operatorname{Cot} 2sx \frac{x dx}{q^2 + x^2} = \\ = \frac{\pi}{2^{p+r+1}} (1 + e^{-1qs}) (1 + e^{-2qs})^{p-1} (1 - e^{-2qs})^{r-1} e^{t(-2)qs} \quad (\text{H, 160}).$$

$$21) \int e^{t \cos 2sx} \sin^r sx \cdot \cos^p sx \cdot \sin \left\{ \frac{1}{2} r\pi - (p+r+2)sx - t \sin 2sx \right\} \cdot \operatorname{Tg} 2sx \frac{dx}{q^2 + x^2} = \\ = \frac{\pi}{2^{p+r+1} q} \frac{1}{e^{2qs} + e^{-2qs}} (1 + e^{-2qs})^{p+1} (1 - e^{-2qs})^{r+1} e^{t(-2)qs} \quad (\text{H, 167}).$$

$$22) \int e^{t \cos 2sx} \sin^r sx \cdot \cos^p sx \cdot \sin \left\{ \frac{1}{2} r\pi - (p+r+2)sx - t \sin 2sx \right\} \cdot \operatorname{Cot} 2sx \frac{dx}{q^2 + x^2} = \\ = \frac{-\pi}{2^{p+r+1} q} (1 + e^{-1qs}) (1 + e^{-2qs})^{p-1} (1 - e^{-2qs})^{r-1} e^{t(-2)qs - 2qs} \quad (\text{H, 167}).$$

$$23) \int e^{t \cos 2sx} \sin^r sx \cdot \cos^p sx \cdot \cos \left\{ \frac{1}{2} r\pi - (p+r+2)sx - t \sin 2sx \right\} \cdot \operatorname{Tg} 2sx \frac{x dx}{q^2 + x^2} = \\ = \frac{-\pi}{2^{p+r+1}} \frac{1}{e^{2qs} + e^{-2qs}} (1 + e^{-2qs})^{p+1} (1 - e^{-2qs})^{r+1} e^{t(-2)qs} \quad (\text{H, 167}).$$

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Exponentielle monôme; TABLE 373, suite.

Lim. 0 et ∞ .

Circ. Dir. à trois ou quatre fact.

$$24) \int e^{t \cos 2sx} \sin^r sx \cdot \cos^p sx \cdot \cos \left\{ \frac{1}{2} r \pi - (p+r+2) sx - t \sin 2sx \right\} \cdot \cot 2sx \frac{x dx}{q^2 + x^2} = \\ = \frac{\pi}{2^{p+r+1}} (1 + e^{-tq}) (1 + e^{-2tq})^{p-1} (1 - e^{-tq})^{r-1} e^{t e^{-2tq} - 2tq} \quad (\text{H, 167}).$$

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Exponent. à expos. polynôme; TABLE 374.

Lim. 0 et ∞ .

Circul. Directe.

$$1) \int e^{r \cos sx + r_1 \cos s_1 x + \dots} \sin \{ r \sin sx + r_1 \sin s_1 x + \dots \} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} \{ e^{r e^{-q} + r_1 e^{-q_1} + \dots} - 1 \} \\ (\text{H, 64}).$$

$$2) \int e^{r \cos sx + r_1 \cos s_1 x + \dots} \cos \{ r \sin sx + r_1 \sin s_1 x + \dots \} \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} e^{r e^{-q} + r_1 e^{-q_1} + \dots} \\ (\text{H, 64}).$$

$$3) \int e^{r \cos sx + r_1 \cos s_1 x + \dots} \sin \{ r \sin sx + r_1 \sin s_1 x + \dots + px \} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} e^{r e^{-q} + r_1 e^{-q_1} + \dots - qp} \\ (\text{H, 68}).$$

$$4) \int e^{r \cos sx + r_1 \cos s_1 x + \dots} \cos \{ r \sin sx + r_1 \sin s_1 x + \dots + px \} \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} e^{r e^{-q} + r_1 e^{-q_1} + \dots - qp} \\ (\text{H, 68}).$$

$$5) \int e^{t \cos ux + \dots} \sin^s rx \dots \cos^n px \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots) x - t \sin ux - \dots \right\} \\ \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{1+n+\dots+s+\dots}} \{ (1 + e^{-2pq})^n \dots (1 - e^{-2qr})^s \dots e^{t e^{-qr} + \dots} - e^{t + \dots} \} \quad (\text{H, 72}).$$

$$6) \int e^{t \cos ux + \dots} \sin^s rx \dots \cos^n px \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots) x - t \sin ux - \dots \right\} \\ \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{1+n+\dots+s+\dots} q} (1 + e^{-2pq})^n \dots (1 - e^{-2qr})^s \dots e^{t e^{-qr} + \dots} \quad (\text{H, 72}).$$

$$7) \int e^{t \cos ux + \dots} \sin^s rx \dots \cos^n px \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + w) x - t \sin ux - \dots \right\} \\ \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{1+n+\dots+s+\dots}} (1 + e^{-2pq})^n \dots (1 - e^{-2qr})^s \dots e^{t e^{-qr} + \dots - qw} \quad (\text{H, 77}).$$

$$8) \int e^{t \cos ux + \dots} \sin^s rx \dots \cos^n px \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + w) x - t \sin ux - \dots \right\} \\ \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{1+n+\dots+s+\dots} q} (1 + e^{-2pq})^n \dots (1 - e^{-2qr})^s \dots e^{t e^{-qr} + \dots - qw} \quad (\text{H, 77}).$$

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Exponentielle binôme;

TABLE 375.

Lim. 0 et ∞ .

Circul. Directe à un facteur.

$$1) \int (e^{r \sin sx} - e^{-r \sin sx}) \sin(r \cos sx) \frac{x dx}{q^2 + x^2} = \pi \{1 - \cos(re^{-qs})\} \text{ (VIII, 500).}$$

$$2) \int (e^{r \sin sx} + e^{-r \sin sx}) \sin(r \cos sx) \frac{dx}{q^2 + x^2} = \frac{\pi}{q} \sin(re^{-qs}) \text{ (VIII, 499).}$$

$$3) \int (e^{r \sin sx} - e^{-r \sin sx}) \cos(r \cos sx) \frac{x dx}{q^2 + x^2} = \pi \{ \sin(re^{-qs}) - re^{-qs} \} \text{ (VIII, 500).}$$

$$4) \int (e^{r \sin sx} + e^{-r \sin sx}) \cos(r \cos sx) \frac{dx}{q^2 + x^2} = \frac{\pi}{q} \cos(re^{-qs}) \text{ (VIII, 499).}$$

$$5) \int \{1 - e^{r \cos sx} \cos(r \sin sx)\} \operatorname{Tg} sx \frac{x dx}{q^2 + x^2} = \frac{\pi e^{r-2qs}}{1 + e^{-2qs}} + \frac{\pi}{2} \frac{1 - e^{-2qs}}{1 + e^{-2qs}} e^{r e^{-qs}} \text{ (H, 154).}$$

$$6) \int \{1 - e^{r \cos sx} \cos(r \sin sx)\} \operatorname{Cot} sx \frac{x dx}{q^2 + x^2} = \frac{\pi e^{r-2qs}}{1 - e^{-2qs}} - \frac{\pi}{2} \frac{1 + e^{-2qs}}{1 - e^{-2qs}} e^{r e^{-qs}} \text{ (H, 154).}$$

$$7) \int \{1 - \cos^r sx \cdot e^{t \cos 2sx} \cos(srx + t \sin 2sx)\} \operatorname{Tg} 2sx \frac{x dx}{q^2 + x^2} = \frac{\pi}{1 + e^{-1qs}} e^{t-1qs} + \\ + \frac{\pi}{2^{r+1}} \frac{1 - e^{-2qs}}{1 + e^{-2qs}} (1 + e^{-2qs})^{r+1} e^{t e^{-2qs}} \text{ (H, 158).}$$

$$8) \int \{1 - \cos^r sx \cdot e^{t \cos 2sx} \cos(srx + t \sin 2sx)\} \operatorname{Cot} 2sx \frac{x dx}{q^2 + x^2} = \frac{\pi}{1 - e^{-1qs}} e^{t-1qs} - \\ - \frac{\pi}{2^{r+1}} \frac{1 + e^{-2qs}}{1 - e^{-2qs}} (1 + e^{-2qs})^{r-1} e^{t e^{-2qs}} \text{ (H, 158).}$$

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Exponentielle binôme;

TABLE 376.

Lim. 0 et ∞ .

Circ. Dir. à deux facteurs.

$$1) \int (e^{r \sin sx} + e^{-r \sin sx}) \sin(r \cos sx) \sin p x \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} (e^{-p q} - e^{p q}) \sin(r e^{-qs}) + \\ + \frac{\pi}{2} e^{p q} \sum_0^d \frac{r^{2n+1}}{1^{2n+1/1}} (-1)^n e^{-(2n+1)qs} + \frac{\pi}{2} e^{-p q} \sum_0^d \frac{r^{2n+1}}{1^{2n+1/1}} (-1)^n e^{(2n+1)qs}$$

$$[p = (2d+1)s + p', p' < 2s], = \frac{\pi}{2} (e^{-p q} - e^{p q}) \sin(r e^{-qs}) +$$

$$+ \frac{\pi}{2} e^{p q} \sum_0^{d-1} \frac{r^{2n+1}}{1^{2n+1/1}} (-1)^n e^{-(2n+1)qs} + \frac{\pi}{2} e^{-p q} \sum_0^d \frac{r^{2n+1}}{1^{2n+1/1}} (-1)^n e^{(2n+1)qs}$$

$$[p = (2d+1)s] \text{ (VIII, 500).}$$

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Exponentielle binôme;

TABLE 376, suite.

Lim. 0 et ∞ .

Circ. Dir. à deux facteurs.

$$2) \int (e^{r \sin s x} - e^{-r \sin s x}) \sin(r \cos s x) \cdot \sin p x \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} (e^{pq} - e^{-pq}) \cos(re^{-qs}) + \\ + \frac{\pi}{2q} e^{pq} \sum_0^d \frac{r^{2n}}{1^{2n+1}} (-1)^n e^{-2nqs} - \frac{\pi}{2q} e^{-pq} \sum_0^d \frac{r^{2n}}{1^{2n+1}} (-1)^n e^{2nqs} \\ [p = 2ds + p', 0 \leq p' < 2s] \text{ (VIII, 500).}$$

$$3) \int (e^{r \sin s x} + e^{-r \sin s x}) \sin(r \cos s x) \cdot \cos p x \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} (e^{pq} + e^{-pq}) \sin(re^{-qs}) - \\ - \frac{\pi}{2q} e^{pq} \sum_0^d \frac{r^{2n+1}}{1^{2n+1+1}} (-1)^n e^{-(2n+1)qs} + \frac{\pi}{2q} e^{-pq} \sum_0^d \frac{r^{2n+1}}{1^{2n+1+1}} (-1)^n e^{(2n+1)qs} \\ [p = (2d+1)s + p', 0 \leq p' < 2s] \text{ (VIII, 500).}$$

$$4) \int (e^{r \sin s x} - e^{-r \sin s x}) \sin(r \cos s x) \cdot \cos p x \frac{x dx}{q^2 + x^2} = -\frac{\pi}{2} (e^{pq} + e^{-pq}) \cos(re^{-qs}) + \\ + \frac{\pi}{2} e^{pq} \sum_0^d \frac{r^{2n}}{1^{2n+1}} (-1)^n e^{-2nqs} + \frac{\pi}{2} e^{-pq} \sum_0^d \frac{r^{2n}}{1^{2n+1}} (-1)^n e^{2nqs} [p = 2ds + p', p' < 2s], = \\ = -\frac{\pi}{2} (e^{pq} + e^{-pq}) \cos(re^{-qs}) + \frac{\pi}{2} e^{pq} \sum_0^{d-1} \frac{r^{2n}}{1^{2n+1}} (-1)^n e^{-2nqs} + \frac{\pi}{2} e^{-pq} \sum_0^d \frac{r^{2n}}{1^{2n+1}} (-1)^n \\ e^{2nqs} [p = 2ds] \text{ (VIII, 501).}$$

$$5) \int (e^{r \sin s x} - e^{-r \sin s x}) \cos(r \cos s x) \cdot \sin p x \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} (e^{pq} - e^{-pq}) \sin(re^{-qs}) - \\ - \frac{\pi}{2q} e^{pq} \sum_0^d \frac{r^{2n+1}}{1^{2n+1+1}} (-1)^n e^{-(2n+1)qs} + \frac{\pi}{2q} e^{-pq} \sum_0^d \frac{r^{2n+1}}{1^{2n+1+1}} (-1)^n e^{(2n+1)qs} \\ [p = (2d+1)s + p', 0 \leq p' < 2s] \text{ (VIII, 500).}$$

$$6) \int (e^{r \sin s x} + e^{-r \sin s x}) \cos(r \cos s x) \cdot \sin p x \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} (e^{pq} - e^{-pq}) \cos(re^{-qs}) + \\ + \frac{\pi}{2} e^{pq} \sum_0^d \frac{r^{2n}}{1^{2n+1}} (-1)^n e^{-2nqs} + \frac{\pi}{2} e^{-pq} \sum_0^d \frac{r^{2n}}{1^{2n+1}} (-1)^n e^{2nqs} [p = 2ds + p', p' < 2s], = \\ = \frac{\pi}{2} (e^{pq} - e^{-pq}) \cos(re^{-qs}) + \frac{\pi}{2} e^{pq} \sum_0^{d-1} \frac{r^{2n}}{1^{2n+1}} (-1)^n e^{-2nqs} + \frac{\pi}{2} e^{-pq} \sum_0^d \frac{r^{2n}}{1^{2n+1}} (-1)^n \\ e^{2nqs} [p = 2ds] \text{ (VIII, 500).}$$

$$7) \int (e^{r \sin s x} + e^{-r \sin s x}) \cos(r \cos s x) \cdot \cos p x \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} (e^{pq} + e^{-pq}) \cos(re^{-qs}) - \\ - \frac{\pi}{2q} e^{pq} \sum_0^d \frac{r^{2n}}{1^{2n+1}} (-1)^n e^{-2nqs} + \frac{\pi}{2q} e^{-pq} \sum_0^d \frac{r^{2n}}{1^{2n+1}} (-1)^n e^{2nqs} \\ [p = 2ds + p', 0 \leq p' < 2s] \text{ (VIII, 499).}$$

$$8) \int (e^{r \sin s x} - e^{-r \sin s x}) \cos(r \cos s x) \cdot \cos p x \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} (e^{p q} + e^{-p q}) \sin(r e^{-q s}) -$$

$$- \frac{\pi}{2} e^{p q} \sum_0^d \frac{r^{2n+1}}{1^{2n+1/1}} (-1)^n e^{-(2n+1) q s} - \frac{\pi}{2} e^{-p q} \sum_0^d \frac{r^{2n+1}}{1^{2n+1/1}} (-1)^n e^{(2n+1) q s}$$

$$[p = (2d+1)s + p', p' < 2s], = \frac{\pi}{2} (e^{p q} + e^{-p q}) \sin(r e^{-q s}) - \frac{\pi}{2} e^{p q}$$

$$\sum_0^{d-1} \frac{r^{2n+1}}{1^{2n+1/1}} (-1)^n e^{-(2n+1) q s} - \frac{\pi}{2} e^{-p q} \sum_0^d \frac{r^{2n+1}}{1^{2n+1/1}} (-1)^n e^{(2n+1) q s}$$

$$[p = (2d+1)s] \text{ (VIII, 501).}$$

$$9) \int (e^{r \sin s x} + e^{-r \sin s x}) \sin(r \cos s x) \cdot \sin^{2a+1} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1}} (e^q - e^{-q})^{2a+1} \sin(r e^{-q s})$$

$$[s > 2a+1], = \frac{(-1)^{a-1} \pi}{2^{2a+1}} [(e^q - e^{-q})^{2a+1} \sin(r e^{-q s}) - r] [s = 2a+1] \text{ (V, 99).}$$

$$10) \int (e^{r \sin s x} - e^{-r \sin s x}) \sin(r \cos s x) \cdot \sin^{2a} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a}} (e^q - e^{-q})^{2a} [\cos(r e^{-q s}) - 1]$$

$$[s > 2a], = \frac{(-1)^{a-1} \pi}{2^{2a}} (e^q - e^{-q})^{2a} \left(\cos(r e^{-q s}) - 1 + \frac{1}{2} r^2 e^{-2 q s} \right) [s = 2a] \text{ (V, 98).}$$

$$11) \int (e^{r \sin s x} + e^{-r \sin s x}) \sin(r \cos s x) \cdot \cos^a x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^a q} (e^q + e^{-q})^a \sin(r e^{-q s}) [s \geq a]$$

$$\text{ (V, 98).}$$

$$12) \int (e^{r \sin s x} - e^{-r \sin s x}) \cos(r \cos s x) \cdot \sin^{2a} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a}} (e^q - e^{-q})^{2a} \sin(r e^{-q s})$$

$$[s > 2a], = \frac{(-1)^a \pi}{2^{2a}} \{ (e^q - e^{-q})^{2a} \sin(r e^{-q s}) - r \} [s = 2a] \text{ (V, 98).}$$

$$13) \int (e^{r \sin s x} + e^{-r \sin s x}) \cos(r \cos s x) \cdot \sin^{2a+1} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1}} \left[e^{-(2a+1) q} \left\{ (1 - e^{(2a+1) q}) \right. \right.$$

$$\left. (1 - e^{-2 q})^{2a+1} - 2 \sum_0^a (-1)^n \binom{2a+1}{n} e^{2 n q} \right\} + (e^q - e^{-q})^{2a+1} [\cos(r e^{-q s}) - 1] \Big]$$

$$[s > 2a+1], = \frac{(-1)^{a-1} \pi}{2^{2a+1}} \left[e^{-(2a+1) q} \left\{ (1 - e^{(2a+1) q}) (1 - e^{-2 q})^{2a+1} - \right. \right.$$

$$\left. - 2 \sum_0^a (-1)^n \binom{2a+1}{n} e^{2 n q} \right\} + (e^q - e^{-q})^{2a+1} \left(\cos(r e^{-q s}) - 1 + \frac{1}{2} r^2 e^{2 q s} \right) \Big]$$

$$[s = 2a+1] \text{ (V, 99).}$$

F. Alg. rat. fract. à dén. $q^1 + x^2$;

Exponentielle binôme;

TABLE 376, suite.

Lim. 0 et ∞ .

Circ. Dir. à deux facteurs.

$$14) \int (e^{r \sin s x} + e^{-r \sin s x}) \cos(r \cos s x) \cdot \cos^{2a} x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{2a} q} \left[\binom{2a}{a} + 2 \sum_1^a \binom{2a}{n+a} e^{-2nq} + \right. \\ \left. + (e^q + e^{-q})^{2a} [\cos(re^{-q}) - 1] \right] [s \geq 2a] \text{ (V, 95).}$$

$$15) \int (e^{r \sin s x} + e^{-r \sin s x}) \cos(r \cos s x) \cdot \cos^{2a+1} x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{2a+1} q} \left[2 \sum_0^a \binom{2a+1}{n+a+1} e^{-(2n+1)q} + \right. \\ \left. + (e^q + e^{-q})^{2a+1} [\cos(re^{-q}) - 1] \right] [s \geq 2a+1] \text{ (V, 98).}$$

F. Alg. rat. fract. à dén. $q^1 + x^2$;

Exponentielle binôme;

TABLE 377.

Lim. 0 et ∞ .

Circ. Dir. à trois facteurs.

$$1) \int (e^{r \sin s x} + e^{-r \sin s x}) \sin(r \cos s x) \cdot \sin p x \cdot \sin^{2a} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1}} (e^q - e^{-q})^{2a} \\ (e^{pq} - e^{-pq}) \sin(re^{-q}) [2p > 4a < s \text{ ou } 4a > 2p < s], = \frac{(-1)^{a-1} \pi}{2^{2a+1}} \{ (e^q - e^{-q})^{2a} \\ (e^{pq} - e^{-pq}) \sin(re^{-q}) - r \} [p = s - 2a] \text{ (V, 100).}$$

$$2) \int (e^{r \sin s x} - e^{-r \sin s x}) \sin(r \cos s x) \cdot \sin p x \cdot \sin^{2a+1} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} (e^q - e^{-q})^{2a+1} \\ (e^{pq} - e^{-pq}) \{ \cos(re^{-q}) - 1 \} [p < s - 2a - 1], = \frac{(-1)^a \pi}{2^{2a+1}} (e^q - e^{-q})^{2a+1} (e^{pq} - e^{-pq}) \\ \left(\cos(re^{-q}) - 1 + \frac{1}{2} r^2 e^{-2sq} \right) [p = s - 2a - 1] \text{ (V, 103).}$$

$$3) \int (e^{r \sin s x} - e^{-r \sin s x}) \sin(r \cos s x) \cdot \sin p x \cdot \cos^a x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{a+1} q} (e^q + e^{-q})^a (e^{pq} - e^{-pq}) \\ [1 - \cos(re^{-q})] [p \leq s - a] \text{ (V, 100).}$$

$$4) \int (e^{r \sin s x} - e^{-r \sin s x}) \sin(r \cos s x) \cdot \cos p x \cdot \sin^{2a} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} (e^q - e^{-q})^{2a} (e^{pq} + e^{-pq}) \\ [\cos(re^{-q}) - 1] [p < s - 2a], = \frac{(-1)^a \pi}{2^{2a+1}} \left[(e^q - e^{-q})^{2a} (e^{pq} + e^{-pq}) \left(\cos(re^{-q}) - 1 + \right. \right. \\ \left. \left. + \frac{1}{2} r^2 e^{-2sq} \right) \right] [p = s - 2a] \text{ (V, 101).}$$

$$5) \int (e^{r \sin s x} + e^{-r \sin s x}) \sin(r \cos s x) \cdot \cos p x \cdot \sin^{2a+1} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+2}} (e^q - e^{-q})^{2a+1} \\ (e^{2q} + e^{-2q}) \sin(re^{-q^2}) [s > 4a + 2 < 2p \text{ ou } 4a + 2 > 2p < s], = \frac{(-1)^a \pi}{2^{2a+1}} \\ \{ (e^q - e^{-q})^{2a+1} (e^{2q} + e^{-2q}) \sin(re^{-q^2}) - r \} [p = s - 2a - 1 \text{ et } 2p > s > 4a + 2 \\ \text{ou } 2p < s < 4a + 2] \quad (\text{V}, 102).$$

$$6) \int (e^{r \sin s x} + e^{-r \sin s x}) \sin(r \cos s x) \cdot \cos p x \cdot \cos^a x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{a+1} q} (e^q + e^{-q})^a (e^{2q} + e^{-2q}) \\ \sin(re^{-q^2}) [2p \geq 2a \leq s \text{ ou } 2a > 2p \leq s] \quad (\text{V}, 99).$$

$$7) \int (e^{r \sin s x} + e^{-r \sin s x}) \cos(r \cos s x) \cdot \sin p x \cdot \sin^{2a} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} (e^q - e^{-q})^{2a} \{ 2e^{-2q} - \\ - (e^{2q} - e^{-2q}) [\cos(re^{-q^2}) - 1] \} [2p > 4a < s], = \frac{(-1)^a \pi}{2^{2a+1}} \left[(e^q - e^{-q})^{2a} \{ 2e^{-2q} - \right. \\ \left. - (e^{2q} - e^{-2q}) [\cos(re^{-q^2}) - 1] \} - 2e^{(2a-p)q} \sum_{n=0}^{d-1} (-1)^n \binom{2a}{n} e^{-2nq} - 2e^{(p-2a)q} \sum_{n=0}^d (-1)^n \binom{2a}{n} e^{2nq} \right] \\ [s > 2p < 4a, p \text{ entier}], = \frac{(-1)^a \pi}{2^{2a+1}} \left[(e^q - e^{-q})^{2a} \{ 2e^{-2q} - (e^{2q} - e^{-2q}) \right. \\ \left. [\cos(re^{-q^2}) - 1] \} - 2e^{(2a-p)q} \sum_{n=0}^d (-1)^n \binom{2a}{n} e^{-2nq} - 2e^{(p-2a)q} \sum_{n=0}^d (-1)^n \binom{2a}{n} e^{2nq} \right] \\ [s > 2p < 4a, p \text{ fractionn.}], = \frac{(-1)^a \pi}{2^{2a+1}} (e^q - e^{-q})^{2a} \left[2e^{-2q} - (e^{2q} - e^{-2q}) \left(\cos(re^{-q^2}) - 1 + \right. \right. \\ \left. \left. + \frac{1}{2} r^2 e^{-2q^2} \right) \right] [2s - 4a = 2p > s > 4a], = \frac{(-1)^a \pi}{2^{2a+1}} \left[(e^q - e^{-q})^{2a} \{ 2e^{-2q} - (e^{2q} - e^{-2q}) \right. \\ \left. \left(\cos(re^{-q^2}) - 1 + \frac{1}{2} r^2 e^{-2q^2} \right) \} - 2e^{(2a-p)q} \sum_{n=0}^{d-1} (-1)^n \binom{2a}{n} e^{-2nq} - 2e^{(p-2a)q} \sum_{n=0}^d (-1)^n \binom{2a}{n} e^{2nq} \right] \\ [2s - 4a = 2p < s < 4a, p \text{ entier}], = \frac{(-1)^a \pi}{2^{2a+1}} \left[(e^q - e^{-q})^{2a} \{ 2e^{-2q} - \right. \\ \left. - (e^{2q} - e^{-2q}) \left(\cos(re^{-q^2}) - 1 + \frac{1}{2} r^2 e^{-2q^2} \right) \} - 2e^{(2a-p)q} \sum_{n=0}^d (-1)^n \binom{2a}{n} e^{-2nq} - \right. \\ \left. - 2e^{(p-2a)q} \sum_{n=0}^d (-1)^n \binom{2a}{n} e^{2nq} \right] [2s - 4a = 2p < s < 4a, p \text{ fractionn.}] \\ \left[d = \mathcal{L} \left(a - \frac{1}{2} p \right) \right] \quad (\text{V}, 100).$$

$$8) \int (e^{r \sin s x} - e^{-r \sin s x}) \cos(r \cos s x) \cdot \sin p x \cdot \sin^{2a+1} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+2}} (e^q - e^{-q})^{2a+1} \\ (e^{2q} - e^{-2q}) \sin(re^{-q^2}) [p < s - 2a - 1], = \frac{(-1)^{a-1} \pi}{2^{2a+2}} \{ (e^q - e^{-q})^{2a+1} (e^{2q} - e^{-2q}) \\ \sin(re^{-q^2}) - r \} [p = s - 2a - 1] \quad (\text{V}, 103).$$

$$9) \int (e^{r \sin s x} - e^{-r \sin s x}) \cos(r \cos s x) \cdot \sin p x \cdot \cos^a x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{a+1} q} (e^q + e^{-q})^a (e^{p q} - e^{-p q})$$

$$\sin(r e^{-q^2}) [p \leq s - a] \quad (\text{V, 99}).$$

$$10) \int (e^{r \sin s x} - e^{-r \sin s x}) \cos(r \cos s x) \cdot \cos p x \cdot \sin^{2a} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} (e^q - e^{-q})^{2a} (e^{p q} + e^{-p q})$$

$$\sin(r e^{-q^2}) [p < s - 2a], = \frac{(-1)^a \pi}{2^{2a+1}} \{ (e^q - e^{-q})^{2a} (e^{p q} + e^{-p q}) \sin(r e^{-q^2}) - r \}$$

$$[p = s - 2a] \quad (\text{V, 101}).$$

$$11) \int (e^{r \sin s x} + e^{-r \sin s x}) \cos(r \cos s x) \cdot \cos p x \cdot \sin^{2a+1} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1}} (e^q - e^{-q})^{2a+1}$$

$$\{ 2e^{-p q} + (e^{p q} + e^{-p q}) [\cos(r e^{-q^2}) - 1] \} [2p > 4a + 2 < s], = \frac{(-1)^{a-1} \pi}{2^{2a+1}} [(e^q - e^{-q})^{2a+1}$$

$$\{ 2e^{-p q} + (e^{p q} + e^{-p q}) [\cos(r e^{-q^2}) - 1] \} - 2e^{(2a+1-p)q} \sum_0^{d-1} (-1)^n \binom{2a+1}{n} e^{-2nq} -$$

$$- 2e^{(p-2a-1)q} \sum_0^d (-1)^n \binom{2a+1}{n} e^{2nq}] [4a + 2 > 2p < s, p \text{ entier}], = \frac{(-1)^{a-1} \pi}{2^{2a+1}}$$

$$\left[(e^q - e^{-q})^{2a+1} \{ 2e^{-p q} + (e^{p q} + e^{-p q}) [\cos(r e^{-q^2}) - 1] \} - 2e^{(2a+1-p)q} \sum_0^{d-1} (-1)^n \binom{2a+1}{n} e^{-2nq} \right.$$

$$\left. - 2e^{(p-2a-1)q} \sum_0^d (-1)^n \binom{2a+1}{n} e^{2nq} \right] [4a + 2 > 2p < s, p \text{ fractionn.}], =$$

$$= \frac{(-1)^{a-1} \pi}{2^{2a+1}} (e^q - e^{-q})^{2a+1} \left\{ 2e^{-p q} + (e^{p q} + e^{-p q}) \left(\cos(r e^{-q^2}) - 1 + \frac{1}{2} r^2 e^{-2q^2} \right) \right\}$$

$$[2s - 4a - 2 = 2p > s > 4a + 2], = \frac{(-1)^{a-1} \pi}{2^{2a+1}} [(e^q - e^{-q})^{2a+1} \{ 2e^{-p q} + (e^{p q} + e^{-p q})$$

$$\left(\cos(r e^{-q^2}) - 1 + \frac{1}{2} r^2 e^{-2q^2} \right) \} - 2e^{(2a+1-p)q} \sum_0^{d-1} (-1)^n \binom{2a+1}{n} e^{-2nq} - 2e^{(p-2a-1)q}$$

$$\sum_0^d (-1)^n \binom{2a+1}{n} e^{2nq}] [2s - 4a - 2 = 2p < s < 4a + 2, p \text{ entier}], = \frac{(-1)^{a-1} \pi}{2^{2a+1}}$$

$$\left[(e^q - e^{-q})^{2a+1} \left\{ 2e^{-p q} + (e^{p q} + e^{-p q}) \left(\cos(r e^{-q^2}) - 1 + \frac{1}{2} r^2 e^{-2q^2} \right) \right\} - 2e^{(2a+1-p)q} \right.$$

$$\left. \sum_0^d (-1)^n \binom{2a+1}{n} e^{2nq} - 2e^{(p-2a-1)q} \sum_0^d (-1)^n \binom{2a+1}{n} e^{2nq} \right] [2s - 4a - 2 =$$

$$= 2p < s < 4a + 2, p \text{ fractionn.}] \left[d = \mathcal{L} \frac{1}{2} (2a + 1 - p) \right] \quad (\text{V, 101, 102}).$$

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Exponentielle binôme;

TABLE 377, suite.

Lim. 0 et ∞ .

Circ. Dir. à trois facteurs.

$$12) \int (e^{r \sin s x} + e^{-r \sin s x}) \cos(r \cos s x) \cdot \cos p x \cdot \cos^a x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{a+1} q} (e^q + e^{-q})^a \{ 2 e^{-p q} + (e^{p q} + e^{-p q}) [\cos(r e^{-q s}) - 1] \} [2p \geq 2a \leq s], = \frac{\pi}{2^{a+1} q} \left[(e^q + e^{-q})^a \{ 2 e^{-p q} + (e^{p q} + e^{-p q}) [\cos(r e^{-q s}) - 1] \} - 2 e^{(a-p)q} \sum_0^d \binom{a}{n} e^{-2nq} + 2 e^{(p-a)q} \sum_0^d \binom{a}{n} e^{2nq} \right] [2a > 2p \leq s] \left[d = \mathcal{C} \frac{1}{2} (a-p) \right] \text{ (V, 99).}$$

F. Alg. rat. fract. à dén. $q^2 - x^2$;

Exponentielle monôme;

TABLE 378.

Lim. 0 et ∞ .

Circ. Dir. à un ou deux fact.

$$1) \int e^{r \cos s x} \sin(r \sin s x) \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \{ 1 - e^{r \cos q s} \cos(r \sin q s) \} \text{ (VIII, 508).}$$

$$2) \int e^{r \cos s x} \cos(r \sin s x) \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} e^{r \cos q s} \sin(r \sin q s) \text{ (VIII, 507).}$$

$$3) \int e^{r \cos s x} \sin(p x + r \sin s x) \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} e^{r \cos q s} \cos(p q + r \sin q s) [p = d s + p'], = \frac{\pi}{2} \frac{r^d}{1^{d/1}} - \frac{\pi}{2} e^{r \cos q s} \cos(p q + r \sin q s) [p = d s] \text{ (VIII, 508).}$$

$$4) \int e^{r \cos s x} \cos(p x + r \sin s x) \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} e^{r \cos q s} \sin(p q + r \sin q s) \text{ (VIII, 508).}$$

$$5) \int e^{r \cos s x} \sin(r \sin s x) \cdot \sin p x \frac{dx}{q^2 - x^2} = -\frac{\pi}{2q} e^{r \cos q s} \sin p q \cdot \cos(r \sin q s) + \frac{\pi}{2q} \sum_0^d \frac{r^n}{1^{n/1}} \sin \{ (p - n s) q \} [p = d s + p', 0 \leq p' < s] \text{ (VIII, 508).}$$

$$6) \int e^{r \cos s x} \sin(r \sin s x) \cdot \cos p x \frac{dx}{q^2 - x^2} = -\frac{\pi}{2} e^{r \cos q s} \cos p q \cdot \cos(r \sin q s) + \frac{\pi}{2} \sum_0^d \frac{r^n}{1^{n/1}} \cos \{ (p - n s) q \} [p = d s + p', p' < s], = -\frac{\pi}{2} e^{r \cos q s} \cos p q \cdot \cos(r \sin q s) + \frac{\pi}{4} \frac{r^d}{1^{d/1}} + \frac{\pi}{2} \sum_0^d \frac{r^n}{1^{n/1}} \cos \{ (p - n s) q \} [p = d s] \text{ (VIII, 508)}$$

$$7) \int e^{r \cos s x} \cos(r \sin s x) \cdot \sin p x \frac{dx}{q^2 - x^2} = \frac{\pi}{2} e^{r \cos q s} \sin p q \cdot \sin(r \sin q s) -$$

F. Alg. rat. fract. à dén. $q^2 - x^2$;

Exponentielle monôme;

TABLE 378, suite.

Lim. 0 et ∞ .

Circ. Dir. à un ou deux fact.

$$-\frac{\pi}{2} \sum_0^d \frac{r^n}{1^{n/1}} \cos\{(p-n)s\}q \quad [p=ds+p', p' < s], = \frac{\pi}{2} e^{r \cos qs} \sin pq \cdot \sin(r \sin qs) + \\ + \frac{\pi}{4} \frac{r^d}{1^{d/1}} - \frac{\pi}{2} \sum_0^d \frac{r^n}{1^{n/1}} \cos\{(p-n)s\}q \quad [p=ds] \quad (\text{VIII}, 507).$$

$$8) \int e^{r \cos sx} \cos(r \sin sx) \cdot \cos px \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} e^{r \cos qs} \cos pq \cdot \sin(r \sin qs) + \\ + \frac{\pi}{2q} \sum_0^d \frac{r^n}{1^{n/1}} \sin\{(p-n)s\}q \quad [p=ds+p', 0 \leq p' < s] \quad (\text{VIII}, 507).$$

$$9) \int e^{r \cos sx} \sin(r \cos sx) \cdot \text{Tg} sx \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \text{Tg} qs \cdot \{e^r - e^{r \cos qs} \cos(r \sin qs)\} \quad (\text{H}, 154).$$

$$10) \int e^{r \cos sx} \sin(r \cos sx) \cdot \text{Cot} sx \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \text{Cot} qs \cdot \{e^r - e^{r \cos qs} \cos(r \sin qs)\} \quad (\text{H}, 154).$$

$$11) \int e^{r \cos sx} \sin(r \sin sx + sx) \cdot \text{Tg} sx \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \text{Tg} qs \cdot \{e^r - e^{r \cos qs} \cos(r \sin qs + qs)\} \\ (\text{H}, 156).$$

$$12) \int e^{r \cos sx} \sin(r \sin sx + sx) \cdot \text{Cot} sx \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \text{Cot} qs \cdot \{e^r - e^{r \cos qs} \cos(r \sin qs + qs)\} \\ (\text{H}, 156).$$

$$13) \int e^{r \cos sx} \cos(r \sin sx + sx) \cdot \text{Tg} sx \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \{e^{r \cos qs} \sin(r \sin qs + qs) \cdot \text{Tg} qs + e^r\} \\ (\text{H}, 156).$$

$$14) \int e^{r \cos sx} \cos(r \sin sx + sx) \cdot \text{Cot} sx \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \{e^{r \cos qs} \sin(r \sin qs + qs) \cdot \text{Cot} qs - e^r\} \\ (\text{H}, 156).$$

F. Alg. rat. fract. à dén. $q^2 - x^2$;

Exponentielle monôme;

TABLE 379.

Lim. 0 et ∞ .

Circ. Dir. à trois ou quatre fact.

$$1) \int e^{t \cos 2rx} \cos^2 rx \cdot \sin(srx + t \sin 2rx) \cdot \text{Tg} 2rx \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \text{Tg} 2qr \cdot \{e^t - e^{t \cos 2qr} \cos^2 qr \cdot \\ \cos(sqr + t \sin 2qr)\} \quad (\text{H}, 159).$$

$$2) \int e^{t \cos 2rx} \cos^2 rx \cdot \sin(srx + t \sin 2rx) \cdot \text{Cot} 2rx \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \text{Cot} 2qr \cdot \{e^t - e^{t \cos 2qr} \cos^2 qr \cdot \\ \cos(sqr + t \sin 2qr)\} \quad (\text{H}, 159).$$

F. Alg. rat. fract. à dén. $q^2 - x^2$;

Exponentielle monôme; TABLE 379, suite.

Lim. 0 et ∞ .

Circ. Dir. à trois ou quatre fact.

$$\begin{aligned} 3) \int e^{t \cos 2rx} \sin^{s-1} rx \cdot \cos^{p-1} rx \cdot \sin \left\{ \frac{1}{2} s \pi - (p+s) rx - t \sin 2rx \right\} \frac{dx}{q^2 - x^2} = \\ = \frac{\pi}{2q} e^{t \cos 2qr} \sin^{s-1} qr \cdot \cos^{p-1} qr \cdot \cos \left\{ \frac{1}{2} s \pi - (p+s) qr - t \sin 2qr \right\} \quad (\text{H, 161}). \end{aligned}$$

$$\begin{aligned} 4) \int e^{t \cos 2rx} \cos^s rx \cdot \sin \{(s+2)rx + t \sin 2rx\} \cdot \text{Tg } 2rx \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \text{Tg } 2qr \cdot [e^t - e^{t \cos 2qr} \\ \cos^s qr \cdot \cos \{(s+2)qr + t \sin 2qr\}] \quad (\text{H, 165}). \end{aligned}$$

$$\begin{aligned} 5) \int e^{t \cos 2rx} \cos^s rx \cdot \sin \{(s+2)rx + t \sin 2rx\} \cdot \text{Cot } 2rx \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \text{Cot } 2qr \cdot [e^t - e^{t \cos 2qr} \\ \cos^s qr \cdot \cos \{(s+2)qr + t \sin 2qr\}] \quad (\text{H, 165}). \end{aligned}$$

$$\begin{aligned} 6) \int e^{t \cos 2rx} \sin^{s-1} rx \cdot \cos^{p-1} rx \cdot \cos \left\{ \frac{1}{2} s \pi - (p+s) rx - t \sin 2rx \right\} \frac{x dx}{q^2 - x^2} = \\ = \frac{\pi}{2} e^{t \cos 2qr} \sin^{s-1} qr \cdot \cos^{p-1} qr \cdot \sin \left\{ \frac{1}{2} s \pi - (p+s) qr - t \sin 2qr \right\} \quad (\text{H, 161}). \end{aligned}$$

$$\begin{aligned} 7) \int e^{t \cos 2rx} \cos^s rx \cdot \cos \{(s+2)rx + t \sin 2rx\} \cdot \text{Tg } 2rx \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} [e^t + e^{t \cos 2qr} \cos^s qr \cdot \\ \text{Tg } 2qr \cdot \sin \{(s+2)qr + t \sin 2qr\}] \quad (\text{H, 165}). \end{aligned}$$

$$\begin{aligned} 8) \int e^{t \cos 2rx} \cos^s rx \cdot \cos \{(s+2)rx + t \sin 2rx\} \cdot \text{Cot } 2rx \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} [e^{t \cos 2qr} \cos^s qr \cdot \\ \text{Cot } 2qr \cdot \sin \{(s+2)qr + t \sin 2qr\} - e^t] \quad (\text{H, 165}). \end{aligned}$$

$$\begin{aligned} 9) \int e^{t \cos 2rx} \sin^{s-1} rx \cdot \cos^{p-1} rx \cdot \sin \left\{ \frac{1}{2} s \pi - (p+s+2) rx - t \sin 2rx \right\} \frac{dx}{q^2 - x^2} = \\ = \frac{\pi}{2q} e^{t \cos 2qr} \sin^{s-1} qr \cdot \cos^{p-1} qr \cdot \cos \left\{ \frac{1}{2} s \pi - (p+s+2) qr - t \sin 2qr \right\} \quad (\text{H, 170}). \end{aligned}$$

$$\begin{aligned} 10) \int e^{t \cos 2rx} \sin^{s-1} rx \cdot \cos^{p-1} rx \cdot \cos \left\{ \frac{1}{2} s \pi - (p+s+2) rx - t \sin 2rx \right\} \frac{x dx}{q^2 - x^2} = \\ = \frac{\pi}{2} e^{t \cos 2qr} \sin^{s-1} qr \cdot \cos^{p-1} qr \cdot \sin \left\{ \frac{1}{2} s \pi - (p+s+2) qr - t \sin 2qr \right\} \quad (\text{H, 169}). \end{aligned}$$

$$\begin{aligned} 11) \int e^{t \cos 2rx} \sin^s rx \cdot \cos^p rx \cdot \sin \left\{ \frac{1}{2} s \pi - (p+s) rx - t \sin 2rx \right\} \cdot \text{Tg } 2rx \frac{dx}{q^2 - x^2} = \\ = \frac{\pi}{2q} e^{t \cos 2qr} \sin^s qr \cdot \cos^p qr \cdot \text{Tg } 2qr \cdot \cos \left\{ \frac{1}{2} s \pi - (p+s) qr - t \sin 2qr \right\} \quad (\text{H, 160}). \end{aligned}$$

F. Alg. rat. fract. à dén. $q^2 - x^2$;

Exponentielle monôme; 'TABLE' 379, suite.

Lim. 0 et ∞ .

Circ. Dir. à trois ou quatre fact.

$$12) \int e^{t \cos 2rx} \sin^s rx \cdot \cos^p rx \cdot \sin \left\{ \frac{1}{2} s\pi - (p+s)rx - t \sin 2rx \right\} \cdot \cot 2rx \frac{dx}{q^2 - x^2} = \\ = \frac{\pi}{2q} e^{t \cos 2qr} \sin^s qr \cdot \cos^p qr \cdot \cot 2qr \cdot \cos \left\{ \frac{1}{2} s\pi - (p+s)qr - t \sin 2qr \right\} \quad (\text{H, 161}).$$

$$13) \int e^{t \cos 2rx} \sin^s rx \cdot \cos^p rx \cdot \cos \left\{ \frac{1}{2} s\pi - (p+s)rx - t \sin 2rx \right\} \cdot \text{tg} 2rx \frac{x dx}{q^2 - x^2} = \\ = \frac{\pi}{2} e^{t \cos 2qr} \sin^s qr \cdot \cos^p qr \cdot \text{tg} 2qr \cdot \sin \left\{ \frac{1}{2} s\pi - (p+s)qr - t \sin 2qr \right\} \quad (\text{H, 160}).$$

$$14) \int e^{t \cos 2rx} \sin^s rx \cdot \cos^p rx \cdot \cos \left\{ \frac{1}{2} s\pi - (p+s)rx - t \sin 2rx \right\} \cdot \cot 2rx \frac{x dx}{q^2 - x^2} = \\ = \frac{\pi}{2} e^{t \cos 2qr} \sin^s qr \cdot \cos^p qr \cdot \cot 2qr \cdot \sin \left\{ \frac{1}{2} s\pi - (p+s)qr - t \sin 2qr \right\} \quad (\text{H, 161}).$$

$$15) \int e^{t \cos 2rx} \sin^s rx \cdot \cos^p rx \cdot \sin \left\{ \frac{1}{2} s\pi - (p+s+2)rx - t \sin 2rx \right\} \cdot \text{tg} 2rx \frac{dx}{q^2 - x^2} = \\ = \frac{\pi}{2q} e^{t \cos 2qr} \sin^s qr \cdot \cos^p qr \cdot \text{tg} 2qr \cdot \cos \left\{ \frac{1}{2} s\pi - (p+s+2)qr - t \sin 2qr \right\} \quad (\text{H, 169}).$$

$$16) \int e^{t \cos 2rx} \sin^s rx \cdot \cos^p rx \cdot \sin \left\{ \frac{1}{2} s\pi - (p+s+2)rx - t \sin 2rx \right\} \cdot \cot 2rx \frac{dx}{q^2 - x^2} = \\ = \frac{\pi}{2q} e^{t \cos 2qr} \sin^s qr \cdot \cos^p qr \cdot \cot 2qr \cdot \cos \left\{ \frac{1}{2} s\pi - (p+s+2)qr - t \sin 2qr \right\} \quad (\text{H, 169}).$$

$$17) \int e^{t \cos 2rx} \sin^s rx \cdot \cos^p rx \cdot \cos \left\{ \frac{1}{2} s\pi - (p+s+2)rx - t \sin 2rx \right\} \cdot \text{tg} 2rx \frac{x dx}{q^2 - x^2} = \\ = -\frac{\pi}{2} e^{t \cos 2qr} \sin^s qr \cdot \cos^p qr \cdot \text{tg} 2qr \cdot \sin \left\{ \frac{1}{2} s\pi - (p+s+2)qr - t \sin 2qr \right\} \quad (\text{H, 168}).$$

$$18) \int e^{t \cos 2rx} \sin^s rx \cdot \cos^p rx \cdot \cos \left\{ \frac{1}{2} s\pi - (p+s+2)rx - t \sin 2rx \right\} \cdot \cot 2rx \frac{x dx}{q^2 - x^2} = \\ = \frac{\pi}{2} e^{t \cos 2qr} \sin^s qr \cdot \cos^p qr \cdot \cot 2qr \cdot \sin \left\{ \frac{1}{2} s\pi - (p+s+2)qr - t \sin 2qr \right\} \quad (\text{H, 169}).$$

F. Alg. rat. fract. à dén. $q^1 - x^2$;

Expon. à expos. polynôme; TABLE 380.

Lim. 0 et ∞ .

Circulaire Directe.

$$1) \int e^{t \cos rx + s_1 \cos r_1 x + \dots} \sin (s \sin rx + s_1 \sin r_1 x + \dots) \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \left\{ e^{s+s_1+\dots} - e^{s \cos qr + s_1 \cos qr_1 + \dots} \right. \\ \left. \cos (s \sin qr + s_1 \sin qr_1 + \dots) \right\} \quad (\text{H, 112}).$$

F. Alg. rat. fract. à dén. $q^2 - x^2$;

Expon. à expos. polynôme; TABLE 350, suite.

Lim. 0 et ∞ .

Circulaire Directe.

$$2) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \cos(s \sin rx + s_1 \sin r_1 x + \dots) \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} e^{s \cos qr + s_1 \cos q r_1 + \dots}$$

$$\sin(s \sin qr + s_1 \sin q r_1 + \dots) \quad (\text{H, 112}).$$

$$3) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin(s \sin rx + s_1 \sin r_1 x + \dots + px) \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} e^{s \cos qr + s_1 \cos q r_1 + \dots}$$

$$\cos(s \sin qr + s_1 \sin q r_1 + \dots + pq) \quad (\text{H, 114}).$$

$$4) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \cos(s \sin rx + s_1 \sin r_1 x + \dots + px) \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} e^{s \cos qr + s_1 \cos q r_1 + \dots}$$

$$\sin(s \sin qr + s_1 \sin q r_1 + \dots + pq) \quad (\text{H, 114}).$$

$$5) \int e^{t \cos ux + \dots} \sin^s rx \dots \cos^n px \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots)x - t \sin ux - \dots \right\} \frac{x dx}{q^2 - x^2} =$$

$$= \frac{\pi}{2} \left[e^{t \cos qu + \dots} \sin^s qr \dots \cos^n pq \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots)q - t \sin qu - \dots \right\} - \right.$$

$$\left. - 2^{-s} - \dots - n - \dots \right] \quad (\text{H, 117}).$$

$$6) \int e^{t \cos ux + \dots} \sin^s rx \dots \cos^n px \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots)x - t \sin ux - \dots \right\} \frac{dx}{q^2 - x^2} =$$

$$= -\frac{\pi}{2q} e^{t \cos qu + \dots} \sin^s qr \dots \cos^n pq \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots)q - \right.$$

$$\left. - t \sin qu - \dots \right\} \quad (\text{H, 117}).$$

$$7) \int e^{t \cos ux + \dots} \sin^s rx \dots \cos^n px \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + w)x - t \sin ux - \dots \right\}$$

$$\frac{x dx}{q^2 - x^2} = \frac{\pi}{2} e^{t \cos qu + \dots} \sin^s qr \dots \cos^n pq \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + w)q - \right.$$

$$\left. - t \sin qu - \dots \right\} \quad (\text{H, 121}).$$

$$8) \int e^{t \cos ux + \dots} \sin^s rx \dots \cos^n px \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + w)x - t \sin ux - \dots \right\}$$

$$\frac{dx}{q^2 - x^2} = -\frac{\pi}{2q} e^{t \cos qu + \dots} \sin^s qr \dots \cos^n pq \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + w)q - \right.$$

$$\left. - t \sin qu - \dots \right\} \quad (\text{H, 121}).$$

$$1) \int (e^{r \sin s x} + e^{-r \sin s x}) \sin(r \cos s x) \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} (e^{r \sin q s} - e^{-r \sin q s}) \cos(r \cos q s) \text{ (VIII, 510).}$$

$$2) \int (e^{r \sin s x} - e^{-r \sin s x}) \sin(r \cos s x) \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \{ (e^{r \sin q s} + e^{-r \sin q s}) \cos(r \cos q s) - 2 \} \text{ (VIII, 510).}$$

$$3) \int (e^{r \sin s x} + e^{-r \sin s x}) \cos(r \cos s x) \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} (e^{-r \sin q s} - e^{r \sin q s}) \sin(r \cos q s) \text{ (VIII, 510).}$$

$$4) \int (e^{r \sin s x} - e^{-r \sin s x}) \cos(r \cos s x) \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \{ 2r \cos q s - (e^{r \sin q s} + e^{-r \sin q s}) \sin(r \cos q s) \} \text{ (VIII, 510).}$$

$$5) \int (e^{r \sin s x} + e^{-r \sin s x}) \sin(r \cos s x) \sin p x \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} (e^{r \sin q s} - e^{-r \sin q s}) \sin(r \cos q s) \sin p q - \\ - \pi \sum_0^d \frac{r^{2n+1}}{1^{2n+1/1}} (-1)^n \cos \{ (p - 2ns - s) q \} [p = (2d+1)s + p', p' < 2s], = \\ = \frac{\pi}{2} (e^{r \sin q s} - e^{-r \sin q s}) \sin(r \cos q s) \sin p q + \frac{\pi r}{2} \frac{(-r^2)^d}{1^{2d+1/1}} - \pi \sum_0^d \frac{r^{2n+1}}{1^{2n+1/1}} (-1)^n \\ \cos \{ (p - 2ns - s) q \} [p = (2d+1)s] \text{ (VIII, 510).}$$

$$6) \int (e^{r \sin s x} - e^{-r \sin s x}) \sin(r \cos s x) \sin p x \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} (e^{r \sin q s} + e^{-r \sin q s}) \cos(r \cos q s) \sin p q - \\ - \frac{\pi}{q} \sum_0^d \frac{r^{2n}}{1^{2n/1}} (-1)^n \sin \{ (p - 2ns) q \} [p = 2ds + p', 0 \leq p' < 2s] \text{ (VIII, 511).}$$

$$7) \int (e^{r \sin s x} + e^{-r \sin s x}) \sin(r \cos s x) \cos p x \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} (e^{r \sin q s} - e^{-r \sin q s}) \cos(r \cos q s) \cos p q + \\ + \frac{\pi}{q} \sum_0^d \frac{r^{2n+1}}{1^{2n+1/1}} (-1)^n \sin \{ (p - 2ns - s) q \} [p = (2d+1)s + p', 0 \leq p' < 2s + 1] \text{ (VIII, 510).}$$

$$8) \int (e^{r \sin s x} - e^{-r \sin s x}) \sin(r \cos s x) \cos p x \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} (e^{r \sin q s} + e^{-r \sin q s}) \sin(r \cos q s) \cos p q - \\ - \pi \sum_0^d \frac{r^{2n}}{1^{2n/1}} (-1)^n \sin \{ (p - 2ns) q \} [p = 2ds + p', p' < 2s], = \frac{\pi}{2} (e^{r \sin q s} + e^{-r \sin q s}) \\ \sin(r \cos q s) \cos p q - \frac{\pi}{2} \frac{(-r^2)^d}{1^{2d/1}} - \pi \sum_0^d \frac{r^{2n}}{1^{2n/1}} (-1)^n \sin \{ (p - 2ns) q \} [p = 2ds] \text{ (VIII, 511).}$$

$$9) \int (e^{r \sin s x} + e^{-r \sin s x}) \cos(r \cos s x) \sin p x \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} (e^{-r \sin q s} - e^{r \sin q s}) \cos(r \cos q s) \sin p q - \\ - \pi \sum_0^d \frac{r^{2n}}{1^{2n/1}} (-1)^n \cos \{ (p - 2ns) q \} [p = 2ds + p', p' < 2s], = \frac{\pi}{2} (e^{-r \sin q s} - e^{r \sin q s}) \\ \cos(r \cos q s) \sin p q + \frac{\pi}{2} \frac{(-r^2)^d}{1^{2d/1}} - \pi \sum_0^d \frac{r^{2n}}{1^{2n/1}} (-1)^n \cos \{ (p - 2ns) q \} [p = 2ds] \text{ (VIII, 510).}$$

F. Alg. rat. fract. à dén. $q^2 - x^2$;

Exponentielle binôme;

TABLE 381, suite.

Lim. 0 et ∞ .

Circulaire Directe

$$10) \int (e^{r \sin s x} - e^{-r \sin s x}) \cos(r \cos s x) \cdot \sin p x \frac{dx}{q^2 - x^2} = -\frac{\pi}{2q} (e^{r \sin q s} + e^{-r \sin q s}) \sin(r \cos q s).$$

$$\sin p q + \frac{\pi}{q} \sum_0^d \frac{r^{2n+1}}{1^{2n+1/1}} (-1)^n \sin \{(p - 2ns - s)q\} [p = (2d + 1)s + p', 0 \leq p' < 2s] \quad (\text{VIII, 511}).$$

$$11) \int (e^{r \sin s x} + e^{-r \sin s x}) \cos(r \cos s x) \cdot \cos p x \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} (e^{-r \sin q s} - e^{r \sin q s}) \sin(r \cos q s).$$

$$\cos p q + \frac{\pi}{q} \sum_0^d \frac{r^{2n}}{1^{2n/1}} (-1)^n \sin \{(p - 2ns)q\} [p = 2ds + p', 0 \leq p' < 2s] \quad (\text{VIII, 510}).$$

$$12) \int (e^{r \sin s x} - e^{-r \sin s x}) \cos(r \cos s x) \cdot \cos p x \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} (e^{r \sin q s} + e^{-r \sin q s}) \sin(r \cos q s).$$

$$\begin{aligned} \cos p q + \pi \sum_0^d \frac{r^{2n+1}}{1^{2n+1/1}} (-1)^n \sin \{(p - 2ns - s)q\} [p = (2d + 1)s + p', p' < 2s], = \\ = -\frac{\pi}{2} (e^{r \sin q s} + e^{-r \sin q s}) \sin(r \cos q s) \cdot \cos p q + \frac{\pi r}{2} \frac{(-r^2)^d}{1^{2d+1/1}} + \pi \sum_0^d \frac{r^{2n+1}}{1^{2n+1/1}} (-1)^n \\ \sin \{(p - 2ns - s)q\} [p = (2d + 1)s] \quad (\text{VIII, 511}). \end{aligned}$$

$$13) \int \{1 - e^{i \cos r x} \cos(s \sin r x)\} \operatorname{Tg} r x \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} \{e^i + e^{i \cos q r} \sin(s \sin q r) \cdot \operatorname{Tg} q r\} \quad (\text{H, 154}).$$

$$14) \int \{1 - e^{i \cos r x} \cos(s \sin r x)\} \operatorname{Cot} r x \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \{e^i - e^{i \cos q r} \sin(s \sin q r) \cdot \operatorname{Cot} q r\} \quad (\text{H, 154}).$$

$$15) \int \{1 - e^{i \cos 2 r x} \cos^2 r x \cdot \cos(s r x + t \sin 2 r x)\} \operatorname{Tg} 2 r x \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} \{e^i + e^{i \cos 2 q r} \cos^2 q r \cdot \operatorname{Tg} 2 q r \cdot \sin(s q r + t \sin 2 q r)\} \quad (\text{H, 159}).$$

$$16) \int \{1 - e^{i \cos 2 r x} \cos^2 r x \cdot \cos(s r x + t \sin 2 r x)\} \operatorname{Cot} 2 r x \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \{e^i - e^{i \cos 2 q r} \cos^2 q r \cdot \operatorname{Cot} 2 q r \cdot \sin(s q r + t \sin 2 q r)\} \quad (\text{H, 159}).$$

F. Alg. rat. fract. à déu. $4m^4 + x^4$;

Expon. de Circulaire Directe;

TABLE 382.

Lim. 0 et ∞ .

Circulaire Directe.

$$\begin{aligned} 1) \int e^{s \cos r x + s_1 \cos r_1 x + \dots} \sin(s \sin r x + s_1 \sin r_1 x + \dots) \frac{x dx}{4m^4 + x^4} = \\ = \frac{\pi}{4m^2} e^{s e^{-mr} \cos mr + s_1 e^{-mr_1} \cos mr_1 + \dots} \{ \sin(s e^{-mr} \sin mr + s_1 e^{-mr_1} \sin mr_1 + \dots) \} \end{aligned}$$

$$\begin{aligned}
 2) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin(s \sin rx + s_1 \sin r_1 x + \dots) \frac{x^3 dx}{4m^4 + x^4} = \\
 = \frac{\pi}{2} e^{s e^{-mr} \cos mr + s_1 e^{-mr_1} \cos mr_1 + \dots} \{ \cos(s e^{-mr} \sin mr + s_1 e^{-mr_1} \sin mr_1 + \dots) - e^{s+s_1+\dots} \} \\
 \text{(H, 66).}
 \end{aligned}$$

$$\begin{aligned}
 3) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \cos(s \sin rx + s_1 \sin r_1 x + \dots) \frac{dx}{4m^4 + x^4} = \\
 = \frac{\pi}{8m^3} e^{s e^{-mr} \cos mr + s_1 e^{-mr_1} \cos mr_1 + \dots} \{ \cos(s e^{-mr} \sin mr + s_1 e^{-mr_1} \sin mr_1 + \dots) + \\
 + \sin(s e^{-mr} \sin mr + s_1 e^{-mr_1} \sin mr_1 + \dots) \} \text{(H, 65).}
 \end{aligned}$$

$$\begin{aligned}
 4) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \cos(s \sin rx + s_1 \sin r_1 x + \dots) \frac{x^2 dx}{4m^4 + x^4} = \\
 = \frac{\pi}{4m} e^{s e^{-mr} \cos mr + s_1 e^{-mr_1} \cos mr_1 + \dots} \{ \cos(s e^{-mr} \sin mr + s_1 e^{-mr_1} \sin mr_1 + \dots) - \\
 - \sin(s e^{-mr} \sin mr + s_1 e^{-mr_1} \sin mr_1 + \dots) \} \text{(H, 65).}
 \end{aligned}$$

$$\begin{aligned}
 5) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin(s \sin rx + s_1 \sin r_1 x + \dots + px) \frac{x dx}{4m^4 + x^4} = \\
 = \frac{\pi}{4m^3} e^{s e^{-mr} \cos mr + s_1 e^{-mr_1} \cos mr_1 + \dots - mp} \sin(s e^{-mr} \sin mr + s_1 e^{-mr_1} \sin mr_1 + \dots + mp) \\
 \text{(H, 69).}
 \end{aligned}$$

$$\begin{aligned}
 6) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin(s \sin rx + s_1 \sin r_1 x + \dots + px) \frac{x^3 dx}{4m^4 + x^4} = \\
 = \frac{\pi}{2} e^{s e^{-mr} \cos mr + s_1 e^{-mr_1} \cos mr_1 + \dots - mp} \{ \cos(s e^{-mr} \sin mr + s_1 e^{-mr_1} \sin mr_1 + \dots + mp) - \\
 - e^{s+s_1+\dots} \} \text{(H, 69).}
 \end{aligned}$$

$$\begin{aligned}
 7) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \cos(s \sin rx + s_1 \sin r_1 x + \dots + px) \frac{dx}{4m^4 + x^4} = \\
 = \frac{\pi}{8m^3} e^{s e^{-mr} \cos mr + s_1 e^{-mr_1} \cos mr_1 + \dots - mp} \{ \cos(s e^{-mr} \sin mr + s_1 e^{-mr_1} \sin mr_1 + \dots + mp) + \\
 + \sin(s e^{-mr} \sin mr + s_1 e^{-mr_1} \sin mr_1 + \dots + mp) \} \text{(H, 69).}
 \end{aligned}$$

$$\begin{aligned}
 8) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \cos(s \sin rx + s_1 \sin r_1 x + \dots + px) \frac{x^3 dx}{4m^4 + x^4} = \\
 = \frac{\pi}{4m} e^{s e^{-mr} \cos mr + s_1 e^{-mr_1} \cos mr_1 + \dots - mp} \{ \cos(s e^{-mr} \sin mr + s_1 e^{-mr_1} \sin mr_1 + \dots + mp) - \\
 - \sin(s e^{-mr} \sin mr + s_1 e^{-mr_1} \sin mr_1 + \dots + mp) \} \text{(H, 69).}
 \end{aligned}$$

$$9) \int e^{t \cos ux + \dots \sin^s rx \dots \cos^q px \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (qp + \dots + sr + \dots) x - t \sin ux - \dots \right\}} \\ \frac{x dx}{4m^4 + x^4} = \frac{-\pi}{2^{2+q+\dots+s+\dots} m^4} (1 + 2e^{-2mp} \cos 2mp + e^{-4mp})^{\frac{1}{2}q} \dots (1 - 2e^{-2mr} \cos 2mr + \\ + e^{-4mr})^{\frac{1}{2}s} \dots e^{t e^{-mu} \cos mu + \dots} \sin \left\{ q \operatorname{Arctg} \frac{\sin 2mp}{e^{2mp} + \cos 2mp} + \dots - s \operatorname{Arctg} \frac{\sin 2mr}{e^{2mr} - \cos 2mr} - \dots + \right. \\ \left. + t e^{-mu} \sin mu + \dots \right\} \quad (\text{H, 74}).$$

$$10) \int e^{t \cos ux + \dots \sin^s rx \dots \cos^q px \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (qp + \dots + sr + \dots) x - t \sin ux - \dots \right\}} \\ \frac{x^3 dx}{4m^4 + x^4} = \frac{\pi}{2^{2+q+\dots+s+\dots}} \left[e^{t+\dots} - (1 + 2e^{-2mp} \cos 2mp + e^{-4mp})^{\frac{1}{2}q} \dots (1 - 2e^{-2mr} \cos 2mr + \right. \\ \left. + e^{-4mr})^{\frac{1}{2}s} \dots e^{t e^{-mu} \cos mu + \dots} \cos \left\{ q \operatorname{Arctg} \frac{\sin 2mp}{e^{2mp} + \cos 2mp} + \dots - s \operatorname{Arctg} \frac{\sin 2mr}{e^{2mr} - \cos 2mr} - \dots + \right. \right. \\ \left. \left. + t e^{-mu} \sin mu + \dots \right\} \right] \quad (\text{H, 74}).$$

$$11) \int e^{t \cos ux + \dots \sin^s rx \dots \cos^q px \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (qp + \dots + sr + \dots) x - t \sin ux - \dots \right\}} \\ \frac{dx}{4m^4 + x^4} = \frac{\pi}{2^{2+q+\dots+s+\dots} m^4} (1 + 2e^{-2mp} \cos 2mp + e^{-4mp})^{\frac{1}{2}q} \dots (1 - 2e^{-2mr} \cos 2mr + \\ + e^{-4mr})^{\frac{1}{2}s} \dots e^{t e^{-mu} \cos mu + \dots} \left[\cos \left\{ q \operatorname{Arctg} \frac{\sin 2mp}{e^{2mp} + \cos 2mp} + \dots - s \operatorname{Arctg} \frac{\sin 2mr}{e^{2mr} - \cos 2mr} - \dots + \right. \right. \\ \left. \left. + t e^{-mu} \sin mu + \dots \right\} + \sin \left\{ q \operatorname{Arctg} \frac{\sin 2mp}{e^{2mp} + \cos 2mp} + \dots - s \operatorname{Arctg} \frac{\sin 2mr}{e^{2mr} - \cos 2mr} - \dots + \right. \right. \\ \left. \left. + t e^{-mu} \sin mu + \dots \right\} \right] \quad (\text{H, 73}).$$

$$12) \int e^{t \cos ux + \dots \sin^s rx \dots \cos^q px \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (qp + \dots + sr + \dots) x - t \sin ux - \dots \right\}} \\ \frac{x^3 dx}{4m^4 + x^4} = \frac{\pi}{2^{2+q+\dots+s+\dots} m^4} (1 + 2e^{-2mp} \cos 2mp + e^{-4mp})^{\frac{1}{2}q} \dots (1 - 2e^{-2mr} \cos 2mr + \\ + e^{-4mr})^{\frac{1}{2}s} \dots e^{t e^{-mu} \cos mu + \dots} \left[\cos \left\{ q \operatorname{Arctg} \frac{\sin 2mp}{e^{2mp} + \cos 2mp} + \dots - s \operatorname{Arctg} \frac{\sin 2mr}{e^{2mr} - \cos 2mr} - \dots + \right. \right. \\ \left. \left. + t e^{-mu} \sin mu + \dots \right\} - \sin \left\{ q \operatorname{Arctg} \frac{\sin 2mp}{e^{2mp} + \cos 2mp} + \dots - s \operatorname{Arctg} \frac{\sin 2mr}{e^{2mr} - \cos 2mr} - \dots + \right. \right. \\ \left. \left. + t e^{-mu} \sin mu + \dots \right\} \right] \quad (\text{H, 73}).$$

F. Alg. rat. fract. à dén. $4m^4 + x^4$;

Expon. de Circ. Directe;

TABLE 382, suite.

Lim. 0 et ∞ .

Circulaire Directe.

$$13) \int e^{t \cos u x + \dots \sin^s r x \dots \cos^q p x \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (q p + \dots + s r + \dots + w) x - t \sin u x - \dots \right\}} \\ \frac{x dx}{4m^4 + x^4} = \frac{-\pi}{2^{2+q+\dots+s+\dots} m^3} (1 + 2e^{-2mp} \cos 2mp + e^{-4mp})^{\frac{1}{2}q} \dots (1 - 2e^{-2mr} \cos 2mr + \\ + e^{-4mr})^{\frac{1}{2}s} \dots e^{t e^{-mu} \cos mu + \dots - mw} \sin \left\{ q \operatorname{Arctg} \frac{\sin 2mp}{e^{2mp} + \cos 2mp} + \dots - s \operatorname{Arctg} \frac{\sin 2mr}{e^{2mr} - \cos 2mr} - \dots + \right. \\ \left. + t e^{-mu} \sin mu + \dots - mw \right\} \quad (\text{H, } 80).$$

$$14) \int e^{t \cos u x + \dots \sin^s r x \dots \cos^q p x \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (q p + \dots + s r + \dots + w) x - t \sin u x - \dots \right\}} \\ \frac{x^3 dx}{4m^4 + x^4} = \frac{\pi}{2^{1+q+\dots+s+\dots}} (1 + 2e^{-2mp} \cos 2mp + e^{-4mp})^{\frac{1}{2}q} \dots (1 - 2e^{-2mr} \cos 2mr + \\ + e^{-4mr})^{\frac{1}{2}s} \dots e^{t e^{-mu} \cos mu + \dots - mw} \cos \left\{ q \operatorname{Arctg} \frac{\sin 2mp}{e^{2mp} + \cos 2mp} + \dots - s \operatorname{Arctg} \frac{\sin 2mr}{e^{2mr} - \cos 2mr} - \dots + \right. \\ \left. + t e^{-mu} \sin mu + \dots - mw \right\} \quad (\text{H, } 80).$$

$$15) \int e^{t \cos u x + \dots \sin^s r x \dots \cos^q p x \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (q p + \dots + s r + \dots + w) x - t \sin u x - \dots \right\}} \\ \frac{dx}{4m^4 + x^4} = \frac{\pi}{2^{3+q+\dots+s+\dots} m^3} (1 + 2e^{-2mp} \cos 2mp + e^{-4mp})^{\frac{1}{2}q} \dots (1 - 2e^{-2mr} \cos 2mr + \\ + e^{-4mr})^{\frac{1}{2}s} \dots e^{t e^{-mu} \cos mu + \dots - mw} \left[\cos \left\{ q \operatorname{Arctg} \frac{\sin 2mp}{e^{2mp} + \cos 2mp} + \dots - s \operatorname{Arctg} \frac{\sin 2mr}{e^{2mr} - \cos 2mr} - \dots + \right. \right. \\ \left. \left. + t e^{-mu} \sin mu + \dots - mw \right\} + \sin \left\{ q \operatorname{Arctg} \frac{\sin 2mp}{e^{2mp} + \cos 2mp} + \dots - s \operatorname{Arctg} \frac{\sin 2mr}{e^{2mr} - \cos 2mr} - \dots + \right. \right. \\ \left. \left. + t e^{-mu} \sin mu + \dots - mw \right\} \right] \quad (\text{H, } 79).$$

$$16) \int e^{t \cos u x + \dots \sin^s r x \dots \cos^q p x \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (q p + \dots + s r + \dots + w) x - t \sin u x - \dots \right\}} \\ \frac{x^3 dx}{4m^4 + x^4} = \frac{\pi}{2^{2+q+\dots+s+\dots} m^3} (1 + 2e^{-2mp} \cos 2mp + e^{-4mp})^{\frac{1}{2}q} \dots (1 - 2e^{-2mr} \cos 2mr + \\ + e^{-4mr})^{\frac{1}{2}s} \dots e^{t e^{-mu} \cos mu + \dots - mw} \left[\cos \left\{ q \operatorname{Arctg} \frac{\sin 2mp}{e^{2mp} + \cos 2mp} + \dots - s \operatorname{Arctg} \frac{\sin 2mr}{e^{2mr} - \cos 2mr} - \dots + \right. \right. \\ \left. \left. + t e^{-mu} \sin mu + \dots - mw \right\} - \sin \left\{ q \operatorname{Arctg} \frac{\sin 2mp}{e^{2mp} + \cos 2mp} + \dots - s \operatorname{Arctg} \frac{\sin 2mr}{e^{2mr} - \cos 2mr} - \dots + \right. \right. \\ \left. \left. + t e^{-mu} \sin mu + \dots - mw \right\} \right] \quad (\text{H, } 79).$$

$$1) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin(s \sin rx + s_1 \sin r_1 x + \dots) \frac{x dx}{q^4 - x^4} = \frac{\pi}{4q^2} \{e^{s e^{-qr} + s_1 e^{-qr_1} + \dots} - e^{s \cos qr + s_1 \cos qr_1 + \dots} \cos(s \sin qr + s_1 \sin qr_1 + \dots)\} \quad (\text{H, 113}).$$

$$2) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin(s \sin rx + s_1 \sin r_1 x + \dots) \frac{x^3 dx}{q^4 - x^4} = \frac{\pi}{4} \{2 - e^{s e^{-qr} + s_1 e^{-qr_1} + \dots} - e^{s \cos qr + s_1 \cos qr_1 + \dots} \cos(s \sin qr + s_1 \sin qr_1 + \dots)\} \quad (\text{H, 113}).$$

$$3) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \cos(s \sin rx + s_1 \sin r_1 x + \dots) \frac{dx}{q^4 - x^4} = \frac{\pi}{4q^2} \{e^{s e^{-qr} + s_1 e^{-qr_1} + \dots} + e^{s \cos qr + s_1 \cos qr_1 + \dots} \sin(s \sin qr + s_1 \sin qr_1 + \dots)\} \quad (\text{H, 113}).$$

$$4) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \cos(s \sin rx + s_1 \sin r_1 x + \dots) \frac{x^2 dx}{q^4 - x^4} = \frac{\pi}{4q} \{e^{s \cos qr + s_1 \cos qr_1 + \dots} \sin(s \sin qr + s_1 \sin qr_1 + \dots) - e^{s e^{-qr} + s_1 e^{-qr_1} + \dots}\} \quad (\text{H, 113}).$$

$$5) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin(s \sin rx + s_1 \sin r_1 x + \dots + px) \frac{x dx}{q^4 - x^4} = \frac{\pi}{4q^2} \{e^{s e^{-qr} + s_1 e^{-qr_1} + \dots - pq} - e^{s \cos qr + s_1 \cos qr_1 + \dots} \cos(s \sin qr + s_1 \sin qr_1 + \dots + pq)\} \quad (\text{H, 115}).$$

$$6) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin(s \sin rx + s_1 \sin r_1 x + \dots + px) \frac{x^3 dx}{q^4 - x^4} = \frac{-\pi}{4} \{e^{s e^{-qr} + s_1 e^{-qr_1} + \dots - pq} + e^{s \cos qr + s_1 \cos qr_1 + \dots} \cos(s \sin qr + s_1 \sin qr_1 + \dots + pq)\} \quad (\text{H, 115}).$$

$$7) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \cos(s \sin rx + s_1 \sin r_1 x + \dots + px) \frac{dx}{q^4 - x^4} = \frac{\pi}{4q^2} \{e^{s e^{-qr} + s_1 e^{-qr_1} + \dots - pq} + e^{s \cos qr + s_1 \cos qr_1 + \dots} \sin(s \sin qr + s_1 \sin qr_1 + \dots + pq)\} \quad (\text{H, 115}).$$

$$8) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \cos(s \sin rx + s_1 \sin r_1 x + \dots + px) \frac{x^2 dx}{q^4 - x^4} = \frac{\pi}{4q} \{e^{s \cos qr + s_1 \cos qr_1 + \dots} \sin(s \sin qr + s_1 \sin qr_1 + \dots + pq) - e^{s e^{-qr} + s_1 e^{-qr_1} + \dots - pq}\} \quad (\text{H, 115}).$$

$$9) \int e^{t \cos ux + \dots} \sin^s rx \dots \cos^n px \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots) x - t \sin ux - \dots \right\} \frac{x dx}{q^4 - x^4} = \frac{\pi}{4q^2} \left[e^{t \cos qu + \dots} \sin^s qr \dots \cos^n pq \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots) q - t \sin qu - \dots \right\} - 2^{-n-\dots-s-\dots} (1 + e^{-2pq})^n \dots (1 - e^{-2qr})^s \dots e^{t e^{-qu} + \dots} \right] \quad (\text{H, 118}).$$

$$10) \int e^{t \cos ux + \dots \sin^s rx \dots \cos^n px \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots) x - t \sin ux - \dots \right\}} \\ \frac{x^3 dx}{q^k - x^k} = \frac{\pi}{4} \left[2^{-n-\dots-s-\dots} (1 + e^{-2pq})^n \dots (1 - e^{-2qr})^s \dots e^{t e^{-q} u} + \dots + e^{t \cos qu} + \dots \right. \\ \left. \sin^s qr \dots \cos^n pq \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots) q - t \sin qu - \dots \right\} - 2 \right] \quad (\text{H, 118}).$$

$$11) \int e^{t \cos ux + \dots \sin^s rx \dots \cos^n px \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots) x - t \sin ux - \dots \right\}} \\ \frac{dx}{q^k - x^k} = \frac{\pi}{4 q^3} \left[2^{-n-\dots-s-\dots} (1 + e^{-2pq})^n \dots (1 - e^{-2qr})^s \dots e^{t e^{-q} u} + \dots - e^{t \cos qu} + \dots \right. \\ \left. \sin^s qr \dots \cos^n pq \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots) q - t \sin qu - \dots \right\} \right] \quad (\text{H, 118}).$$

$$12) \int e^{t \cos ux + \dots \sin^s rx \dots \cos^n px \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots) x - t \sin ux - \dots \right\}} \\ \frac{x^3 dx}{q^k - x^k} = \frac{-\pi}{4 q} \left[e^{t \cos qu} + \dots \sin^s qr \dots \cos^n pq \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots) q - \right. \right. \\ \left. \left. - t \sin qu - \dots \right\} + 2^{-n-\dots-s-\dots} (1 + e^{-2pq})^n \dots (1 - e^{-2qr})^s \dots e^{t e^{-q} u} + \dots \right] \quad (\text{H, 118}).$$

$$13) \int e^{t \cos ux + \dots \sin^s rx \dots \cos^n px \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + w) x - t \sin ux - \dots \right\}} \\ \frac{x dx}{q^k - x^k} = \frac{\pi}{4 q^3} \left[e^{t \cos qu} + \dots \sin^s qr \dots \cos^n pq \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + w) q - \right. \right. \\ \left. \left. - t \sin qu - \dots \right\} - 2^{-n-\dots-s-\dots} (1 + e^{-2pq})^n \dots (1 - e^{-2qr})^s \dots e^{t e^{-q} u} + \dots - w q \right] \quad (\text{H, 123}).$$

$$14) \int e^{t \cos ux + \dots \sin^s rx \dots \cos^n px \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + w) x - t \sin ux - \dots \right\}} \\ \frac{x^3 dx}{q^k - x^k} = \frac{\pi}{4} \left[2^{-n-\dots-s-\dots} (1 + e^{-2pq})^n \dots (1 - e^{-2qr})^s \dots e^{t e^{-q} u} + \dots - w q + e^{t \cos qu} + \dots \right. \\ \left. \sin^s qr \dots \cos^n pq \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + w) q - t \sin qu - \dots \right\} \right] \quad (\text{H, 123}).$$

$$15) \int e^{t \cos ux + \dots \sin^s rx \dots \cos^n px \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + w) x - t \sin ux - \dots \right\}} \\ \frac{dx}{q^k - x^k} = \frac{\pi}{4 q^3} \left[2^{-n-\dots-s-\dots} (1 + e^{-2pq})^n \dots (1 - e^{-2qr})^s \dots e^{t e^{-q} u} + \dots - w q - e^{t \cos qu} + \dots \right. \\ \left. \sin^s qr \dots \cos^n pq \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + w) q - t \sin qu - \dots \right\} \right] \quad (\text{H, 122}).$$

F. Alg. rat. fract. à dén. $q^i - x^i$;

Expon. de Circ. Directe;

Circulaire Directe.

TABLE 383, suite.

Lim. 0 et ∞ .

$$16) \int e^{i \cos u x + \dots \sin^s r x \dots \cos^n p x \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + w) x - t \sin u x - \dots \right\}} \frac{x^i dx}{q^i - x^i} = \frac{-\pi}{4q} \left[e^{i \cos u q + \dots \sin^s q r \dots \cos^n p q \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + w) q - t \sin q u - \dots \right\}} + 2^{-n} \dots (1 + e^{-2pr})^n \dots (1 - e^{-2qr})^s \dots e^{i \cos u q + \dots - wq} \right] \text{ (H, 122).}$$

F. Alg. rat. fract. à dén. $(q^2 - x^2)^2$;

Expon. de Circ. Directe;

Circulaire Directe.

TABLE 384.

Lim. 0 et ∞ .

$$1) \int e^{s \cos r x + s_1 \cos r_1 x + \dots \sin (s \sin r x + s_1 \sin r_1 x + \dots)} \frac{x dx}{(q^2 - x^2)^2} = \frac{\pi}{4q} e^{s \cos q r + s_1 \cos q r_1 + \dots} \{sr \sin (s \sin q r + q r) + s_1 r_1 \sin (s_1 \sin q r_1 + q r_1) + \dots\} \text{ (H, 114).}$$

$$2) \int e^{s \cos r x + s_1 \cos r_1 x + \dots \sin (s \sin r x + s_1 \sin r_1 x + \dots)} \frac{x^3 dx}{(q^2 - x^2)^2} = \frac{\pi}{4} \left[e^{s \cos q r + s_1 \cos q r_1 + \dots} \{2 \cos (s \sin q r + s_1 \sin q r_1 + \dots) - q \{sr \sin (s \sin q r + q r) + s_1 r_1 \sin (s_1 \sin q r_1 + q r_1) + \dots\} - 2\} \right] \text{ (H, 114).}$$

$$3) \int e^{s \cos r x + s_1 \cos r_1 x + \dots \cos (s \sin r x + s_1 \sin r_1 x + \dots)} \frac{dx}{(q^2 - x^2)^2} = \frac{\pi}{4q^3} e^{s \cos q r + s_1 \cos q r_1 + \dots} [\sin (s \sin q r + s_1 \sin q r_1 + \dots) - q \{sr \cos (s \sin q r + q r) + s_1 r_1 \cos (s_1 \sin q r_1 + q r_1) + \dots\}] \text{ (H, 113).}$$

$$4) \int e^{s \cos r x + s_1 \cos r_1 x + \dots \cos (s \sin r x + s_1 \sin r_1 x + \dots)} \frac{x^3 dx}{(q^2 - x^2)^2} = \frac{-\pi}{4q} e^{s \cos q r + s_1 \cos q r_1 + \dots} [\sin (s \sin q r + s_1 \sin q r_1 + \dots) + q \{sr \cos (s \sin q r + q r) + s_1 r_1 \cos (s_1 \sin q r_1 + q r_1) + \dots\}] \text{ (H, 114).}$$

$$5) \int e^{s \cos r x + s_1 \cos r_1 x + \dots \sin (s \sin r x + s_1 \sin r_1 x + \dots + r_a x)} \frac{x dx}{(q^2 - x^2)^2} = \frac{\pi}{4q} e^{s \cos q r + s_1 \cos q r_1 + \dots} [\cos q r_a \cdot \{sr \sin (s \sin q r + q r) + s_1 r_1 \sin (s_1 \sin q r_1 + q r_1) + \dots\} + r_a \sin (s_a \sin q r_a + q r_a) + s_a r_a \cos (s_a \sin q r_a + q r_a) \cdot \sin q r_a] \text{ (H, 116).}$$

$$6) \int e^{s \cos r x + s_1 \cos r_1 x + \dots} \sin(s \sin r x + s_1 \sin r_1 x + \dots + r_a x) \frac{x^3 dx}{(q^2 - x^2)^2} = \frac{\pi}{4} e^{s \cos q r + s_1 \cos q r_1 + \dots} \\ [2 \cos(s \sin q r + s_1 \sin q r_1 + \dots + q r_a) - q \cos q r_a \{s r \sin(s \sin q r + q r) + \\ + s_1 r_1 \sin(s_1 \sin q r_1 + q r_1) + \dots\} - q r_a \{ \sin(s_a \sin q r_a + q r_a) + \\ + s_a \cos(s_a \sin q r_a + q r_a) \cdot \sin q r_a \}] \quad (\text{H, 116}).$$

$$7) \int e^{s \cos r x + s_1 \cos r_1 x + \dots} \cos(s \sin r x + s_1 \sin r_1 x + \dots + r_a x) \frac{dx}{(q^2 - x^2)^2} = \frac{\pi}{4 q^3} e^{s \cos q r + s_1 \cos q r_1 + \dots} \\ [\sin(s \sin q r + s_1 \sin q r_1 + \dots + q r_a) - q \cos q r_a \{s r \cos(s \sin q r + q r) + \\ + s_1 r_1 \cos(s_1 \sin q r_1 + q r_1) + \dots\} - q r_a \{ \cos(s_a \sin q r_a + q r_a) - \\ - s_a \sin(s_a \sin q r_a + q r_a) \cdot \sin q r_a \}] \quad (\text{H, 116}).$$

$$8) \int e^{s \cos r x + s_1 \cos r_1 x + \dots} \cos(s \sin r x + s_1 \sin r_1 x + \dots + r_a x) \frac{x^2 dx}{(q^2 - x^2)^2} = \frac{-\pi}{4 q} e^{s \cos q r + s_1 \cos q r_1 + \dots} \\ [\sin(s \sin q r + s_1 \sin q r_1 + \dots + q r_a) + q \cos q r_a \{s r \cos(s \sin q r + q r) + \\ + s_1 r_1 \cos(s_1 \sin q r_1 + q r_1) + \dots\} + q r_a \{ \cos(s_a \sin q r_a + q r_a) - \\ - s_a \sin(s_a \sin q r_a + q r_a) \cdot \sin q r_a \}] \quad (\text{H, 116}).$$

$$9) \int e^{t \cos u x + \dots} \sin^s r x \dots \cos^n p x \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (n p + \dots + s r + \dots) x - t \sin u x - \dots \right\} \\ \frac{x dx}{(q^2 - x^2)^2} = \frac{-\pi}{4 q} e^{t \cos q u + \dots} \sin^s q r \dots \cos^n p q \dots \left[n p \operatorname{Sec} p q \cdot \sin \{ (n+1) p q \} + \dots + s r \operatorname{Cosec} q r \cdot \right. \\ \left. \sin \left\{ (s-1) \frac{1}{2} \pi - (s+1) q r \right\} + \dots + t u \sin(t \sin q u + q u) + \dots \right] \quad (\text{H, 119}).$$

$$10) \int e^{t \cos u x + \dots} \sin^s r x \dots \cos^n p x \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (n p + \dots + s r + \dots) x - t \sin u x - \dots \right\} \\ \frac{x^3 dx}{(q^2 - x^2)^2} = \frac{\pi}{4} \left[2^{-n-\dots-s-\dots} e^{t \cos q u + \dots} \sin^s q r \dots \cos^n p q \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - \right. \right. \\ \left. \left. - (n p + \dots + s r + \dots) q - t \sin q u - \dots \right\} - q \left\{ n p \operatorname{Sec} p q \cdot \sin \{ (n+1) p q \} + \dots + s r \operatorname{Cosec} q r \cdot \right. \right. \\ \left. \left. \sin \left\{ (s-1) \frac{1}{2} \pi - (s+1) q r \right\} + \dots + t u \sin(t \sin q u + q u) + \dots \right\} \right] \quad (\text{H, 119}).$$

$$11) \int e^{t \cos u x + \dots} \sin^s r x \dots \cos^n p x \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (n p + \dots + s r + \dots) x - t \sin u x - \dots \right\} \\ \frac{dx}{(q^2 - x^2)^2} = \frac{-\pi}{4 q^2} e^{t \cos q u + \dots} \sin^s q r \dots \cos^n p q \dots \left[\sin \left\{ (s + \dots) \frac{1}{2} \pi - (n p + \dots + s r + \dots) q - \right. \right.$$

$$-t \sin qu - \dots \} + q \left\{ np \operatorname{Sec} pq \cdot \cos \{(n+1)pq\} + \dots + sr \operatorname{Cosec} qr \cdot \cos \left\{ (s-1) \frac{1}{2} \pi - (s+1)qr \right\} + \dots + tu \cos(t \sin qu + qu) + \dots \right\} \quad (\text{H, 119}).$$

$$12) \int e^{t \cos ux + \dots} \sin^s rx \dots \cos^n px \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots)x - t \sin ux - \dots \right\} \\ \frac{x^2 dx}{(q^2 - x^2)^2} = \frac{\pi}{4q} e^{t \cos qu + \dots} \sin^s qr \dots \cos^n pq \dots \left[\sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots)q - \right. \right. \\ \left. \left. - t \sin qu - \dots \right\} - q \left\{ np \operatorname{Sec} pq \cdot \cos \{(n+1)pq\} + \dots + sr \operatorname{Cosec} qr \cdot \cos \left\{ (s-1) \frac{1}{2} \pi - \right. \right. \right. \\ \left. \left. - (s+1)qr \right\} + \dots + tu \cos(t \sin qu + qu) + \dots \right\} \quad (\text{H, 119}).$$

$$13) \int e^{t \cos ux + \dots} \sin^s rx \dots \cos^n px \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + r_a)x - t \sin ux - \dots \right\} \\ \frac{x dx}{(q^2 - x^2)^2} = -\frac{\pi}{2q} e^{t \cos qu + \dots} \sin^s qr \dots \cos^n pq \dots \left\{ \cos qr_a \cdot \left[np \operatorname{Sec} pq \cdot \sin \{(n+1)pq\} + \dots + \right. \right. \\ \left. \left. + sr \operatorname{Cosec} qr \cdot \sin \left\{ (s-1) \frac{1}{2} \pi - (s+1)qr \right\} + \dots + tu \sin(t \sin qu + qu) + \dots \right] + \right. \\ \left. + r_a [\sin(t_a \sin qr_a + qr_a) + t_a \cos(t_a \sin qr_a + qr_a) \cdot \sin qr_a] \right\} \quad (\text{H, 124}).$$

$$14) \int e^{t \cos ux + \dots} \sin^s rx \dots \cos^n px \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + r_a)x - t \sin ux - \dots \right\} \\ \frac{x^3 dx}{(q^2 - x^2)^3} = -\frac{\pi}{2} e^{t \cos qu + \dots} \sin^s qr \dots \cos^n pq \dots \left\{ \cos \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + r_a)q - \right. \right. \\ \left. \left. - t \sin qu - \dots \right\} + q \cos qr_a \cdot \left[np \operatorname{Sec} pq \cdot \sin \{(n+1)pq\} + \dots + sr \operatorname{Cosec} qr \cdot \sin \left\{ (s-1) \frac{1}{2} \pi - \right. \right. \right. \\ \left. \left. - (s+1)qr \right\} + \dots + tu \sin(t \sin qu + qu) + \dots \right] + qr_a \cdot [\sin(t_a \sin qr_a + qr_a) + \\ + t_a \cos(t_a \sin qr_a + qr_a) \cdot \sin qr_a] \right\} \quad (\text{H, 125}).$$

$$15) \int e^{t \cos ux + \dots} \sin^s rx \dots \cos^n px \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + r_a)x - t \sin ux - \dots \right\} \\ \frac{dx}{(q^2 - x^2)^2} = \frac{-\pi}{4q^3} e^{t \cos qu + \dots} \sin^s qr \dots \cos^n pq \dots \left\{ \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + r_a)q - \right. \right.$$

F. Alg. rat. fract. à dén. $(q^2 - x^2)^2$;

Expon. de Circ. Directe;

TABLE 384, suite.

Lim. 0 et ∞ .

Circulaire Directe.

$$\begin{aligned} & -t \sin qu - \dots \} + q \cos qr_a \cdot [np \sec pq \cdot \cos \{(n+1)pq\} + \dots + sr \operatorname{cosec} qr \cdot \cos \{(s-1)\frac{1}{2}\pi - \\ & - (s+1)qr\} + \dots + tu \cos (t \sin qu + qu) + \dots] + qr_a \cdot [\cos (t_a \sin qr_a + qr_a) - \\ & - t_a \sin (t_a \sin qr_a + qr_a) \cdot \sin qr_a] \} \quad (\text{H, 124}). \end{aligned}$$

$$\begin{aligned} 16) \int e^{t \cos ux + \dots} \sin^s rx \dots \cos^n px \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + r_a)x - t \sin ux - \dots \right\} \\ \frac{x^2 dx}{(q^2 - x^2)^2} = \frac{\pi}{4q} e^{t \cos qu + \dots} \sin^s qr \dots \cos^n pq \dots \left\{ \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + r_a)q - \right. \right. \\ \left. \left. - t \sin qu - \dots \right\} - q \cos qr_a \cdot [np \sec pq \cdot \cos \{(n+1)pq\} + \dots + sr \operatorname{cosec} qr \cdot \cos \{(s-1)\frac{1}{2}\pi - \right. \\ \left. - (s+1)qr\} + \dots + tu \cos (t \sin qu + qu) + \dots] - qr_a \cdot [\cos (t_a \sin qr_a + qr_a) - \right. \\ \left. - t_a \sin (t_a \sin qr_a + qr_a) \cdot \sin qr_a] \right\} \quad (\text{H, 124}). \end{aligned}$$

F. Alg. rat. fract. à dén. comp.;

Expon. de Circ. Directe;

TABLE 385.

Lim. 0 et ∞ .

Circulaire Directe.

$$\begin{aligned} 1) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin (s \sin rx + s_1 \sin r_1 x + \dots) \frac{dx}{x(q^2 + x^2)} = \frac{\pi}{2q^2} (e^{s+s_1+\dots} - \\ - e^{s-s_1-r_1+s_1-r_1+\dots}) \quad (\text{H, 153}). \end{aligned}$$

$$\begin{aligned} 2) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin (s \sin rx + s_1 \sin r_1 x + \dots + px) \frac{dx}{x(q^2 + x^2)} = \frac{\pi}{2q^2} (e^{s+s_1+\dots} - \\ - e^{s-s_1-r_1+s_1-r_1+\dots-pq}) \quad (\text{H, 155}). \end{aligned}$$

$$\begin{aligned} 3) \int e^{t \cos ux + \dots} \sin^s rx \dots \cos^n px \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots)x - t \sin ux - \dots \right\} \\ \frac{dx}{x(q^2 + x^2)} = \frac{\pi}{2^{1+n+\dots+s+\dots} q^2} (1 + e^{-2pq})^n \dots (1 - e^{-2qr})^s \dots e^{t \cos qu + \dots} \quad (\text{H, 157}). \end{aligned}$$

$$\begin{aligned} 4) \int e^{t \cos ux + \dots} \sin^s rx \dots \cos^n px \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + w)x - t \sin ux - \dots \right\} \\ \frac{dx}{x(q^2 + x^2)} = \frac{\pi}{2^{1+n+\dots+s+\dots} q^2} (1 + e^{-2pq})^n \dots (1 - e^{-2qr})^s \dots e^{t \cos qu + \dots - qw} \quad (\text{H, 162}). \end{aligned}$$

$$5) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin(s \sin rx + s_1 \sin r_1 x + \dots) \frac{dx}{x(q^2 - x^2)} = \frac{\pi}{2q^2} \{e^{s+s_1+\dots} - e^{s \cos qr + s_1 \cos qr_1 + \dots} \cos(s \sin qr + s_1 \sin qr_1 + \dots)\} \quad (\text{H, 153}).$$

$$6) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin(s \sin rx + s_1 \sin r_1 x + \dots + px) \frac{dx}{x(q^2 - x^2)} = \frac{\pi}{2q^2} \{e^{s+s_1+\dots} - e^{s \cos qr + s_1 \cos qr_1 + \dots} \cos(s \sin qr + s_1 \sin qr_1 + \dots + pq)\} \quad (\text{H, 155}).$$

$$7) \int e^{t \cos ux + \dots} \sin^s rx \dots \cos^n px \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots) x - t \sin ux - \dots \right\} \frac{dx}{x(q^2 - x^2)} = \frac{\pi}{2q^2} e^{t \cos qu + \dots} \sin^s qr \dots \cos^n pq \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots) q - t \sin qu - \dots \right\} \quad (\text{H, 157}).$$

$$8) \int e^{t \cos ux + \dots} \sin^s rx \dots \cos^n px \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + w) x - t \sin ux - \dots \right\} \frac{dx}{x(q^2 - x^2)} = \frac{\pi}{2q^2} e^{t \cos qu + \dots} \sin^s qr \dots \cos^n pq \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + w) q - t \sin qu - \dots \right\} \quad (\text{H, 162}).$$

$$9) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin(s \sin rx + s_1 \sin r_1 x + \dots) \frac{dx}{x(4q^4 + x^4)} = \frac{\pi}{8q^4} \{e^{s+s_1+\dots} - e^{s e^{-qr} \cos qr + s_1 e^{-qr_1} \cos qr_1 + \dots} \cos(s e^{-qr} \sin qr + s_1 e^{-qr_1} \sin qr_1 + \dots)\} \quad (\text{H, 153}).$$

$$10) \int e^{s \cos rx + s_1 \cos r_1 x + \dots} \sin(s \sin rx + s_1 \sin r_1 x + \dots + px) \frac{dx}{x(4q^4 + x^4)} = \frac{\pi}{8q^4} \{e^{s+s_1+\dots} - e^{s e^{-qr} \cos qr + s_1 e^{-qr_1} \cos qr_1 + \dots - pq} \cos(s e^{-qr} \sin qr + s_1 e^{-qr_1} \sin qr_1 + \dots + pq)\} \quad (\text{H, 155}).$$

$$11) \int e^{t \cos ux + \dots} \sin^s rx \dots \cos^n px \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots) x - t \sin ux - \dots \right\} \frac{dx}{x(4q^4 + x^4)} = \frac{\pi}{2^{s+n+\dots+s_1+\dots} q^4} (1 + e^{-2pq} \cos 2pq + e^{-4pq})^{\frac{1}{2}s} \dots (1 - e^{-2qr} \cos 2qr + e^{-4qr})^{\frac{1}{2}s} \dots e^{t e^{-qu} \cos qu + \dots} \cos \left\{ n \operatorname{Arctg} \frac{\sin 2pq}{e^{2pq} + \cos 2pq} + \dots - s \operatorname{Arctg} \frac{\sin 2qr}{e^{2qr} - \cos 2qr} - \dots + t e^{-qu} \sin qu + \dots \right\} \quad (\text{H, 157}).$$

F. Alg. rat. fract. à dén. comp.;

Expon. de Circ. Directe; TABLE 385, suite.

Lim. 0 et ∞.

Circulaire Directe.

$$12) \int e^{t \cos u x + \dots \sin^s r x \dots \cos^n p x \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + w) x - t \sin u x - \dots \right\}} \frac{dx}{x(4q^4 + x^4)} = \frac{\pi}{2^{s+n+\dots+s+\dots} q^4} (1 + e^{-2pq} \cos 2pq + e^{-4pq})^{t^n} \dots (1 - e^{-2qr} \cos 2qr + e^{-4qr})^{t^s} \dots e^{t e^{-q^u} \cos q u + \dots - q w} \cos \left\{ n \operatorname{Arctg} \frac{\sin 2pq}{e^{2pq} + \cos 2pq} + \dots - s \operatorname{Arctg} \frac{\sin 2qr}{e^{2qr} - \cos 2qr} - \dots + t e^{-q^u} \sin q u + \dots - q w \right\} \quad (\text{H, 162}).$$

$$13) \int e^{s \cos r x + s_1 \cos r_1 x + \dots \sin (s \sin r x + s_1 \sin r_1 x + \dots)} \frac{dx}{x(q^4 - x^4)} = \frac{\pi}{4q^4} \{ 2e^{s+s_1+\dots} - e^{s e^{-qr} + s_1 e^{-qr_1} + \dots} - e^{s \cos q r + s_1 \cos q r_1 + \dots} \cos (s \sin q r + s_1 \sin q r_1 + \dots) \} \quad (\text{H, 153}).$$

$$14) \int e^{s \cos r x + s_1 \cos r_1 x + \dots \sin (s \sin r x + s_1 \sin r_1 x + \dots + p x)} \frac{dx}{x(q^4 - x^4)} = \frac{\pi}{4q^4} \{ 2e^{s+s_1+\dots} - e^{s e^{-qr} + s_1 e^{-qr_1} + \dots - p q} - e^{s \cos q r + s_1 \cos q r_1 + \dots} \cos (s \sin q r + s_1 \sin q r_1 + \dots + p q) \} \quad (\text{H, 155}).$$

$$15) \int e^{t \cos u x + \dots \sin^s r x \dots \cos^n p x \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots) x - t \sin u x - \dots \right\}} \frac{dx}{x(q^4 - x^4)} = \frac{\pi}{4q^4} \left[2^{s+n+\dots+s+\dots} (1 + e^{-2pq})^n \dots (1 - e^{-2qr})^s \dots e^{t e^{-q^u} + \dots + e^{t \cos q u + \dots} \sin^s q r \dots \cos^n p q \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots) q - t \sin q u - \dots \right\}} \right] \quad (\text{H, 157}).$$

$$16) \int e^{t \cos u x + \dots \sin^s r x \dots \cos^n p x \dots \sin \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + w) x - t \sin u x - \dots \right\}} \frac{dx}{x(q^4 - x^4)} = \frac{\pi}{4q^4} \left[2^{s+n+\dots+s+\dots} (1 + e^{-2pq})^n \dots (1 - e^{-2qr})^s \dots e^{t e^{-q^u} + \dots - q w + e^{t \cos q u + \dots} \sin^s q r \dots \cos^n p q \dots \cos \left\{ (s + \dots) \frac{1}{2} \pi - (np + \dots + sr + \dots + w) q - t \sin q u - \dots \right\}} \right] \quad (\text{H, 162}).$$

F. Alg. rat. fract.;

Exponentielle; } Autre forme. TABLE 386.

Circulaire Directe.

Lim. 0 et ∞.

$$1) \int e^{-p\sqrt{x}} \cos(p\sqrt{x}) \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} e^{-p\sqrt{2q}}$$

$$2) \int e^{-p\sqrt{x}} \cos(p\sqrt{x}) \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} e^{-p\sqrt{q}} \sin(p\sqrt{q})$$

F. Alg. rat. fract.;
Exponentielle;
Circulaire Directe.

Autre forme. TABLE 386, suite.

Lim. 0 et ∞ .

$$3) \int e^{-p\sqrt{x}} \cos(p\sqrt{x}) \frac{dx}{q^4 + x^4} = \frac{\pi}{2q^3 \sqrt{2}} e^{-p\sqrt{q} \cdot \sqrt{\frac{2+\sqrt{2}}{2}}} \left\{ \sin\left(p\sqrt{q} \cdot \sqrt{\frac{2-\sqrt{2}}{2}}\right) + \cos\left(p\sqrt{q} \cdot \sqrt{\frac{2-\sqrt{2}}{2}}\right) \right\}$$

$$4) \int \frac{(r + \sqrt{\frac{1}{2}x}) \cos(p\sqrt{\frac{1}{2}x}) - \sqrt{\frac{1}{2}x} \cdot \sin(p\sqrt{\frac{1}{2}x})}{x + r\sqrt{2x} + r^2} \frac{e^{-p\sqrt{\frac{1}{2}x}}}{q^2 + x^2} dx = \frac{\pi}{2q} \frac{e^{-p\sqrt{q}}}{r + \sqrt{q}}$$

$$5) \int \frac{(r + \sqrt{\frac{1}{2}x}) \cos(p\sqrt{\frac{1}{2}x}) - \sqrt{\frac{1}{2}x} \cdot \sin(p\sqrt{\frac{1}{2}x})}{x + r\sqrt{2x} + r^2} \frac{e^{-p\sqrt{\frac{1}{2}x}}}{q^2 - x^2} dx = \frac{\pi}{q} \frac{e^{-p\sqrt{\frac{1}{2}q}} (r + \sqrt{\frac{1}{2}q}) \sin(p\sqrt{\frac{1}{2}q}) - \sqrt{\frac{1}{2}q} \cdot \cos(p\sqrt{\frac{1}{2}q})}{q + r\sqrt{2q} + r^2}$$

Sur 1) à 5) voyez Russell, C. & D. M. J. 8, 156.

$$6) \int e^{-px} \cos px \frac{x dx}{q^4 + x^4} = \frac{\pi}{4q^3} e^{-p\sqrt{q}} \text{ V. T. 386, N. 1.}$$

$$7) \int e^{-px} \cos px \frac{x dx}{q^4 - x^4} = \frac{\pi}{2q^3} e^{-p\sqrt{q}} \sin pq \text{ V. T. 386, N. 2.}$$

$$8) \int e^{-px} \cos px \frac{x dx}{q^4 + x^4} = \frac{\pi}{4q^3 \sqrt{2}} e^{-p\sqrt{q} \cdot \sqrt{\frac{2+\sqrt{2}}{2}}} \left\{ \sin\left(p\sqrt{q} \cdot \sqrt{\frac{2-\sqrt{2}}{2}}\right) + \cos\left(p\sqrt{q} \cdot \sqrt{\frac{2-\sqrt{2}}{2}}\right) \right\} \text{ V. T. 386, N. 3.}$$

$$9) \int \frac{(r+x) \cos px - x \sin px}{2x^2 + 2rx + r^2} \frac{x e^{-px}}{q^4 + x^4} dx = \frac{\pi}{2q^3} \frac{e^{-2p\sqrt{q}}}{r + 2q} \text{ V. T. 386, N. 4.}$$

$$10) \int \frac{(r+x) \cos px - x \sin px}{2x^2 + 2rx + r^2} \frac{x e^{-px}}{q^4 - x^4} dx = \frac{\pi}{q^3} e^{-p\sqrt{q}} \frac{(q+r) \sin pq - q \cos pq}{2q^2 + 2qr + r^2} \text{ V. T. 386, N. 5.}$$

F. Alg. rat. fract. monôme;
Expon. en dén. binôme;
Circul. Dir. au numér.

TABLE 387.

Lim. 0 et ∞ .

$$1) \int \frac{\sin px}{e^{qx} + e^{-qx}} \frac{dx}{x} = \text{Arctg}\left(e^{\frac{px}{q}}\right) \text{ V. T. 264, N. 14.}$$

$$2) \int \frac{\cos px}{e^{qx} - e^{-qx}} \frac{dx}{x} = -\frac{1}{2} l\left(e^{\frac{px}{q}} + e^{-\frac{px}{q}}\right) \text{ V. T. 264, N. 6.}$$

$$3) \int \frac{\sin px}{1 - e^{-x}} \frac{dx}{x} = -\sum_0^{\infty} \text{Arctg}\left(\frac{p}{n}\right) \text{ V. T. 264, N. 13.}$$

$$4) \int \frac{\cos px}{1 - e^{-x}} \frac{dx}{x} = -\frac{1}{2} \sum_0^{\infty} l(n^2 + p^2) \text{ V. T. 264, N. 5.}$$

F. Alg. rat. fract. monôme;

Expon. en dén. binôme;

Circul. Dir. au numér.

TABLE 387, suite.

Lim. 0 et ∞ .

$$5) \int \frac{\sin^2 qx}{1-e^x} \frac{dx}{x} = \frac{1}{4} l \frac{4q\pi}{e^{1/2 q\pi} - e^{-1/2 q\pi}} \quad 6) \int \frac{e^{px} - e^{-px}}{e^x - e^{-x}} \frac{\sin qx}{x} dx = \text{Arctg} \left(\frac{e^{qx} - 1}{e^{qx} + 1} \text{Tg} \frac{1}{2} p\pi \right)$$

$$7) \int \frac{e^{px} + e^{-px}}{e^x - e^{-x}} \frac{\sin^2 qx}{x} dx = \frac{1}{4} l \frac{e^{1/2 q\pi} + 2 \text{Cosp} \pi + e^{-1/2 q\pi}}{2(1 + \text{Cosp} \pi)}$$

Sur 5) à 7) voyez Winckler, Sitz. Ber. Wien. 21, 389.

$$8) \int \frac{e^{qx} - e^{-qx}}{e^{qx} + e^{-qx}} \frac{\text{Cosp} x}{x} dx = l \frac{1 + e^{-\frac{p}{2} q}}{1 - e^{-\frac{p}{2} q}} \text{V. T. 265, N. 1.}$$

$$9) \int \frac{e^{qx} + e^{-qx}}{e^{qx} - e^{-qx}} \frac{\text{Cosp} x}{x} dx = -l \left(e^{\frac{p}{2} q} - e^{-\frac{p}{2} q} \right) \text{V. T. 265, N. 3.}$$

$$10) \int \frac{1 - \text{Cosp} x}{e^{1/2 p\pi} - 1} \frac{dx}{x} = \frac{1}{4} p + \frac{1}{2} l \frac{1 - e^{-p}}{p} \text{Schlömlich, Schl. Z. 6, 407.}$$

F. Alg. rat. fract. binôme;

Expon. en dén. bin. $e^x + e^{-x}$; TABLE 388.

Circul. Dir. au numér.

Lim. 0 et ∞ .

$$1) \int \frac{\sin qx}{e^{1/2 p\pi} + e^{-1/2 p\pi}} \frac{x dx}{1+x^2} = \frac{\pi}{2\sqrt{2}} e^{-q} + \frac{e^q - e^{-q}}{4\sqrt{2}} l \frac{e^q + \sqrt{2} + e^{-q}}{e^q - \sqrt{2} + e^{-q}} - \frac{e^q + e^{-q}}{2\sqrt{2}} \text{Arctg} \left(\frac{\sqrt{2}}{e^q - e^{-q}} \right)$$

V. T. 389, N. 8.

$$2) \int \frac{\sin qx}{e^{1/2 p\pi} + e^{-1/2 p\pi}} \frac{x dx}{1+x^2} = \frac{1}{2} q e^{-q} - \frac{e^q - e^{-q}}{4} l(1 + e^{-1/2 q}) \text{V. T. 389, N. 10.}$$

$$3) \int \frac{e^{1/2 p\pi} - e^{-1/2 p\pi}}{e^{1/2 p\pi} + e^{-1/2 p\pi}} \frac{\sin qx}{1+x^2} dx = q e^{-q} - \frac{e^q - e^{-q}}{2} l(1 - e^{-1/2 q}) \text{V. T. 389, N. 9.}$$

$$4) \int \frac{e^{1/2 p\pi} - 1}{e^{1/2 p\pi} + 1} \frac{\sin qx}{1+x^2} dx = -\frac{\pi}{2} e^q + \frac{e^q - e^{-q}}{2} l \frac{e^q + 1}{e^q - 1} + (e^q + e^{-q}) \text{Arctg}(e^q) \text{V. T. 388, N. 8.}$$

$$5) \int \frac{\cos qx}{e^{1/2 p\pi} + e^{-1/2 p\pi}} \frac{dx}{1+x^2} = \frac{\pi}{2\sqrt{2}} e^{-q} - \frac{e^q + e^{-q}}{4\sqrt{2}} l \frac{e^q + \sqrt{2} + e^{-q}}{e^q - \sqrt{2} + e^{-q}} + \frac{e^q - e^{-q}}{2\sqrt{2}} \text{Arctg} \left(\frac{\sqrt{2}}{e^q - e^{-q}} \right)$$

V. T. 389, N. 18.

$$6) \int \frac{\cos qx}{e^{1/2 p\pi} + e^{-1/2 p\pi}} \frac{dx}{1+x^2} = \frac{1}{2} q e^{-q} + \frac{e^q + e^{-q}}{4} l(1 + e^{-1/2 q}) \text{V. T. 389, N. 20.}$$

$$7) \int \frac{e^{1/2 p\pi} - e^{-1/2 p\pi}}{e^{1/2 p\pi} + e^{-1/2 p\pi}} \frac{x \cos qx}{1+x^2} dx = -q e^{-q} - \frac{e^q - e^{-q}}{2} l(1 - e^{-1/2 q}) \text{V. T. 389, N. 19.}$$

$$8) \int \frac{e^{1/2 p\pi} - 1}{e^{1/2 p\pi} + 1} \frac{x \cos qx}{1+x^2} dx = -\frac{\pi}{2} e^q + \frac{e^q + e^{-q}}{2} l \frac{e^q + 1}{e^q - 1} + (e^q - e^{-q}) \text{Arctg}(e^q) \text{V. T. 389, N. 17.}$$

- $$1) \int \frac{\sin qx}{e^{\frac{1}{2}\pi x} - e^{-\frac{1}{2}\pi x}} \frac{dx}{1+x^2} = -\frac{e^{-q}}{2\sqrt{2}} + \frac{e^q - e^{-q}}{4\sqrt{2}} \operatorname{Arctg} \frac{e^q + \sqrt{2} + e^{-q}}{e^q - \sqrt{2} + e^{-q}} + \frac{e^q + e^{-q}}{2\sqrt{2}} \operatorname{Arctg} \left(\frac{\sqrt{2}}{e^q - e^{-q}} \right)$$
- $$2) \int \frac{\sin qx}{e^{\frac{1}{2}\pi x} - e^{-\frac{1}{2}\pi x}} \frac{dx}{1+x^2} = \frac{e^q + e^{-q}}{2} \operatorname{Arctg}(e^q) - \frac{\pi}{4} e^{-q} \quad (\text{IV, 510}).$$
- $$3) \int \frac{e^{\frac{1}{2}\pi x} + 1}{e^{\frac{1}{2}\pi x} - 1} \frac{\sin qx}{1+x^2} dx = -\frac{\pi}{2} e^{-q} + \frac{e^q - e^{-q}}{2} \operatorname{Arctg} \frac{e^q + 1}{e^q - 1} + (e^q + e^{-q}) \operatorname{Arctg}(e^{-q}) \quad (\text{IV, 510}).$$
- $$4) \int \frac{\sin qx}{e^{\pi x} - e^{-\pi x}} \frac{dx}{1+x^2} = -\frac{q}{4} e^{-q} + \frac{e^q - e^{-q}}{4} \operatorname{Arctg}(1 + e^{-q}) \quad \text{V. T. 389, N. 9.}$$
- $$5) \int \frac{e^{\pi x} + e^{-\pi x}}{e^{\pi x} - e^{-\pi x}} \frac{\sin qx}{1+x^2} dx = \frac{q}{2} e^{-q} + \frac{e^q - e^{-q}}{2} \operatorname{Arctg}(1 - e^{-q}) \quad \text{V. T. 389, N. 9.}$$
- $$6) \int \frac{e^{\pi x} + 1}{e^{\pi x} - 1} \frac{\sin qx}{1+x^2} dx = \frac{e^q - e^{-q}}{2} \operatorname{Arctg} \frac{e^q + 1}{e^q - 1} \quad (\text{IV, 510}).$$
- $$7) \int \frac{e^{px} + e^{-px}}{e^{\frac{1}{2}\pi x} - e^{-\frac{1}{2}\pi x}} \frac{\sin qx}{1+x^2} dx = -\frac{\pi}{2} e^{-q} \cos p + \frac{e^q - e^{-q}}{4} \sin p \cdot \operatorname{Arctg} \frac{e^q + 2 \sin p + e^{-q}}{e^q - 2 \sin p + e^{-q}} +$$
- $$+ \frac{e^q + e^{-q}}{2} \cos p \cdot \operatorname{Arctg} \left(\frac{2 \cos p}{e^q - e^{-q}} \right) \left[p^2 \leq \frac{1}{4} \pi^2 \right] \quad (\text{IV, 510}).$$
- $$8) \int \frac{e^{px} - e^{-px}}{e^{\frac{1}{2}\pi x} - e^{-\frac{1}{2}\pi x}} \frac{x \sin qx}{1+x^2} dx = \frac{\pi}{2} e^{-q} \sin p + \frac{e^q - e^{-q}}{4} \cos p \cdot \operatorname{Arctg} \frac{e^q + 2 \sin p + e^{-q}}{e^q - 2 \sin p + e^{-q}} -$$
- $$- \frac{e^q + e^{-q}}{2} \sin p \cdot \operatorname{Arctg} \left(\frac{2 \cos p}{e^q - e^{-q}} \right) \left[p^2 < \frac{1}{4} \pi^2 \right] \quad \text{V. T. 389, N. 18.}$$
- $$9) \int \frac{e^{px} + e^{-px}}{e^{\pi x} - e^{-\pi x}} \frac{\sin qx}{1+x^2} dx = -\frac{1}{2} e^{-q} (q \cos p + p \sin p) + \frac{e^q - e^{-q}}{4} \cos p \cdot \operatorname{Arctg} (1 + 2 e^{-q} \cos p + e^{-2q}) +$$
- $$+ \frac{e^q + e^{-q}}{2} \sin p \cdot \operatorname{Arctg} \left(\frac{\sin p}{e^q + \cos p} \right) [p^2 \leq \pi^2] \quad (\text{IV, 511}).$$
- $$10) \int \frac{e^{px} - e^{-px}}{e^{\pi x} - e^{-\pi x}} \frac{x \sin px}{1+x^2} dx = \frac{1}{2} e^{-q} (q \sin p - p \cos p) - \frac{e^q - e^{-q}}{4} \sin p \cdot \operatorname{Arctg} (1 + 2 e^{-q} \cos p + e^{-2q}) +$$
- $$+ \frac{e^q + e^{-q}}{2} \cos p \cdot \operatorname{Arctg} \left(\frac{\sin p}{e^q + \cos p} \right) [p^2 < \pi^2] \quad \text{V. T. 389, N. 20.}$$
- $$11) \int \frac{\cos qx}{e^{\frac{1}{2}\pi x} - e^{-\frac{1}{2}\pi x}} \frac{x dx}{1+x^2} = \frac{e^q - e^{-q}}{2} \operatorname{Arctg}(e^q) + \frac{\pi}{4} e^{-q} - \frac{1}{2} \quad \text{V. T. 389, N. 17.}$$
- $$12) \int \frac{e^{\frac{1}{2}\pi x} + e^{-\frac{1}{2}\pi x}}{e^{\frac{1}{2}\pi x} - e^{-\frac{1}{2}\pi x}} \frac{x \cos qx}{1+x^2} dx = -1 + \frac{e^q + e^{-q}}{2} \operatorname{Arctg} \frac{1 + e^{-q}}{1 - e^{-q}} \quad \text{V. T. 389, N. 19.}$$
- $$13) \int \frac{e^{\frac{1}{2}\pi x} + 1}{e^{\frac{1}{2}\pi x} - 1} \frac{x \cos qx}{1+x^2} dx = -2 + \frac{\pi}{2} e^{-q} + \frac{e^q + e^{-q}}{2} \operatorname{Arctg} \frac{e^q + 1}{e^q - 1} + (e^q - e^{-q}) \operatorname{Arctg}(e^{-q})$$

$$14) \int \frac{\cos qx}{e^{\pi x} - e^{-\pi x}} \frac{x dx}{1+x^2} = -\frac{1}{4} + \frac{1}{4} q e^{-q} + \frac{e^q + e^{-q}}{4} l(1+e^{-q}) \quad \text{V. T. 389, N. 21.}$$

$$15) \int \frac{e^{\pi x} + e^{-\pi x}}{e^{\pi x} - e^{-\pi x}} \frac{x \cos qx}{1+x^2} dx = -\frac{1}{2} - \frac{q}{2} e^{-q} - \frac{e^q + e^{-q}}{2} l(1-e^{-q}) \quad \text{V. T. 389, N. 21.}$$

$$16) \int \frac{e^{\pi x} + 1}{e^{\pi x} - 1} \frac{x \cos qx}{1+x^2} dx = -1 + \frac{e^q + e^{-q}}{2} l \frac{e^q + 1}{e^q - 1} \quad \text{V. T. 389, N. 17.}$$

$$17) \int \frac{e^{px} + e^{-px}}{e^{px} - e^{-px}} \frac{x \cos qx}{1+x^2} dx = -1 + \frac{\pi}{2} e^{-q} \cos p + \frac{e^q + e^{-q}}{4} \sin p \cdot l \frac{e^q + 2 \sin p + e^{-q}}{e^q - 2 \sin p + e^{-q}} + \\ + \frac{e^q - e^{-q}}{2} \cos p \cdot \text{Arctg} \left(\frac{2 \cos p}{e^q - e^{-q}} \right) \left[p^2 \leq \frac{1}{4} \pi^2 \right] \quad (\text{IV, 512}).$$

$$18) \int \frac{e^{px} - e^{-px}}{e^{px} - e^{-px}} \frac{x \cos qx}{1+x^2} dx = \frac{\pi}{2} e^{-q} \sin p - \frac{e^q + e^{-q}}{4} \cos p \cdot l \frac{e^q + 2 \sin p + e^{-q}}{e^q - 2 \sin p + e^{-q}} + \\ + \frac{e^q - e^{-q}}{2} \sin p \cdot \text{Arctg} \left(\frac{2 \cos p}{e^q - e^{-q}} \right) \left[p^2 < \frac{1}{4} \pi^2 \right] \quad (\text{IV, 512}).$$

$$19) \int \frac{e^{px} + e^{-px}}{e^{\pi x} - e^{-\pi x}} \frac{x \cos qx}{1+x^2} dx = \frac{1}{2} e^{-q} (q \cos p + p \sin p) - \frac{1}{2} + \frac{e^q + e^{-q}}{4} \cos p \cdot l(1 + 2 e^{-q} \cos p + e^{-2q}) + \\ + \frac{e^q - e^{-q}}{2} \sin p \cdot \text{Arctg} \left(\frac{\sin p}{e^q + \cos p} \right) \left[p^2 \leq \pi^2 \right] \quad \text{V. T. 389, N. 9.}$$

$$20) \int \frac{e^{px} - e^{-px}}{e^{\pi x} - e^{-\pi x}} \frac{x \cos qx}{1+x^2} dx = \frac{1}{2} e^{-q} (q \sin p - p \cos p) + \frac{e^q + e^{-q}}{4} \sin p \cdot l(1 + 2 e^{-q} \cos p + e^{-2q}) - \\ - \frac{e^q - e^{-q}}{2} \cos p \cdot \text{Arctg} \left(\frac{\sin p}{e^q + \cos p} \right) \left[p^2 < \pi^2 \right] \quad (\text{IV, 512}).$$

$$21) \int \frac{e^{px} + e^{-px}}{e^{\pi x} - e^{-\pi x}} \frac{\sin qx}{r^2 + x^2} dx = \frac{1}{2r^2} - \frac{\pi}{2r} \frac{e^{-qr} \cos pr}{\sin r\pi} + \sum_1^{\infty} (-1)^{n-1} \frac{e^{-nr} \cos np}{n^2 - r^2} \quad [0 \leq p \leq \pi] \\ (\text{IV, 512}).$$

$$22) \int \frac{e^{px} - e^{-px}}{e^{\pi x} - e^{-\pi x}} \frac{\cos qx}{r^2 + x^2} dx = \frac{\pi}{2r} \frac{e^{-qr} \sin pr}{\sin r\pi} + \sum_1^{\infty} (-1)^n \frac{e^{-nr} \sin np}{n^2 - r^2} \quad [0 < p < \pi] \quad (\text{IV, 512}).$$

$$23) \int \frac{e^{px} - e^{-px}}{e^{\pi x} - e^{-\pi x}} \frac{x \sin qx}{r^2 + x^2} dx = \frac{\pi}{2} \frac{e^{-qr} \sin pr}{\sin r\pi} + \sum_1^{\infty} (-1)^n \frac{n e^{-nr} \sin np}{n^2 - r^2} \quad [0 < p < \pi]$$

V. T. 389, N. 22.

$$24) \int \frac{e^{px} + e^{-px}}{e^{\pi x} - e^{-\pi x}} \frac{x \cos qx}{r^2 + x^2} dx = \frac{\pi}{2} \frac{e^{-qr} \cos pr}{\sin r\pi} + \sum_1^{\infty} (-1)^n \frac{n e^{-nr} \cos np}{n^2 - r^2} \quad [0 \leq p \leq \pi]$$

V. T. 389, N. 21.

F. Alg. rat. fract. binôme;
Exp. en dén. polynôme; } Autre forme. TABLE 390.
Circulaire Directe.

Lim. 0 et ∞ .

$$1) \int \frac{\sin x}{e^{qx} + 2 \cos x + e^{-qx}} \frac{x dx}{x^2 - \pi^2} = \frac{1}{2} \operatorname{Arctg} \left(\frac{1}{q} \right) - \frac{1}{2q} \quad (\text{IV}, 512).$$

$$2) \int \frac{\sin x}{e^{qx} - 2 \cos x + e^{-qx}} \frac{x dx}{x^2 - \pi^2} = \frac{1}{2} \frac{q}{1+q^2} - \frac{1}{2} \operatorname{Arctg} \left(\frac{1}{q} \right) \quad (\text{IV}, 512).$$

$$3) \int \frac{e^{qx} + e^{-qx}}{e^{2qx} - 2 \cos 2x + e^{-2qx}} \frac{x \sin x}{x^2 - \pi^2} dx = \frac{1}{2q} \frac{1}{1+q^2} \quad \text{V. T. 390, N. 1, 2.}$$

$$4) \int \frac{\sin 2x}{e^{2qx} - 2 \cos 2x + e^{-2qx}} \frac{x dx}{x^2 - \pi^2} = \frac{1}{4q} \frac{1+2q^2}{1+q^2} - \frac{1}{2} \operatorname{Arctg} \left(\frac{1}{q} \right) \quad \text{V. T. 390, N. 1, 2.}$$

$$5) \int \frac{e^{\pi x} + e^{-\pi x}}{e^{\pi x} - e^{-\pi x}} \frac{\cos qx}{1+x^2} \frac{dx}{x} = \frac{1}{2} \frac{1-q+qe^{-q}}{1-e^{-q}} + \frac{1}{2} (e^{\frac{1}{2}q} - e^{-\frac{1}{2}q})^2 l(1-e^{-q})$$

V. T. 387, N. 9 et T. 389, N. 15.

$$6) \int \frac{\cos qx - e^{-qx}}{x^2 + r^2} \frac{dx}{x} = \frac{\pi}{2r^2} e^{-\frac{1}{2}qr\sqrt{2}} \sin \left(\frac{1}{2}qr\sqrt{2} \right) \quad (\text{IV}, 512).$$

F. Alg. rat. fract.;
Exponentielle;
Circ. Dir. au dén. monôme.

TABLE 391.

Lim. 0 et ∞ .

$$1) \int e^{-\tau_0^2 x} \frac{\sin x}{\cos^2 x} \frac{dx}{x} = \frac{1}{2} \sqrt{\pi} \quad (\text{VIII}, 414). \quad 2) \int e^{-\tau_0^2 x} \frac{\sin x}{\cos^2 x} \frac{dx}{x} = \frac{1}{2} \sqrt{\pi} \quad (\text{VIII}, 414).$$

$$3) \int e^{-\tau_0^2 x} \frac{\operatorname{Tgx}}{\cos^2 2x} \frac{dx}{x} = \frac{1}{2} \sqrt{\pi} \quad (\text{VIII}, 414).$$

$$4) \int \frac{e^{s \cos rx} \sin(s \sin rx)}{\sin rx} \frac{dx}{q^2 + x^2} = \frac{\pi}{q(e^{qr} - e^{-qr})} (e^s - e^{s e^{-qr}}) \quad (\text{H}, 154).$$

$$5) \int \frac{1 - e^{s \cos rx} \cos(s \sin rx)}{\sin rx} \frac{x dx}{q^2 + x^2} = \frac{\pi}{e^{qr} - e^{-qr}} (e^s - e^{s e^{-qr}}) \quad (\text{H}, 154).$$

$$6) \int e^{s \cos rx} \frac{\sin(s \sin rx + rx)}{\sin rx} \frac{dx}{q^2 + x^2} = \frac{\pi}{q(e^{qr} - e^{-qr})} (e^s - e^{s e^{-qr} - qr}) \quad (\text{H}, 156).$$

$$7) \int e^{s \cos rx} \frac{\cos(s \sin rx + rx)}{\sin rx} \frac{x dx}{q^2 + x^2} = \frac{\pi}{e^{qr} - e^{-qr}} (e^s - e^{s e^{-qr} - qr}) \quad (\text{H}, 155).$$

$$8) \int e^{t \cos 2rx} \cos^{s-1} rx \frac{\sin(srx + t \sin 2rx)}{\sin rx} \frac{dx}{q^2 + x^2} = \frac{2^{1-t} \pi}{(e^{1qr} - e^{-2qr})q} \{ 2^s e^t - (1 + e^{-1qr})^s e^{t e^{-2qr}} \} \quad (\text{H}, 158).$$

$$9) \int \frac{1 - e^{i \cos 2rx} \cos^s rx \cdot \cos(srx + i \sin 2rx)}{\sin 2rx} \frac{x dx}{q^2 + x^2} = \frac{2^{-s} \pi}{e^{iqr} - e^{-iqr}} \{ 2^s e^i - (1 + e^{-2qr})^s e^{i e^{-2qr}} \} \quad (\text{H, 158}).$$

$$10) \int e^{i \cos 2rx} \cos^{s-1} rx \frac{\sin \{(s+2)rx + i \sin 2rx\}}{\sin rx} \frac{dx}{q^2 + x^2} = \frac{2^{1-s} \pi}{(e^{iqr} - e^{-iqr})q} \{ 2^s e^i - (1 + e^{-2qr})^s e^{i e^{-2qr} - 2qr} \} \quad (\text{H, 164}).$$

$$11) \int e^{i \cos 2rx} \cos^{s-1} rx \frac{\cos \{(s+2)rx + i \sin 2rx\}}{\sin rx} \frac{x dx}{q^2 + x^2} = \frac{2^{1-s} \pi}{e^{iqr} + e^{-iqr}} \{ 2^s e^i - (1 + e^{-2qr})^s e^{i e^{-2qr} - 2qr} \} \quad (\text{H, 164}).$$

$$12) \int e^{i \cos rx} \frac{\sin(s \sin rx)}{\sin rx} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q \sin qr} \{ e^i - e^{i \cos qr} \cos(s \sin qr) \} \quad (\text{H, 154}).$$

$$13) \int \frac{1 - e^{i \cos rx} \cos(s \sin rx)}{\sin rx} \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} e^{i \cos qr} \frac{\sin(s \sin qr)}{\sin qr} \quad (\text{H, 154}).$$

$$14) \int e^{i \cos rx} \frac{\sin(s \sin rx + rx)}{\sin rx} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q \sin qr} \{ e^i - e^{i \cos qr} \cos(s \sin qr + qr) \} \quad (\text{H, 156}).$$

$$15) \int e^{i \cos rx} \frac{\cos(s \sin rx + rx)}{\sin rx} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} e^{i \cos qr} \frac{\sin(s \sin qr + qr)}{\sin qr} \quad (\text{H, 156}).$$

$$16) \int e^{i \cos 2rx} \cos^{s-1} rx \frac{\sin(srx + i \sin 2rx)}{\sin rx} \frac{dx}{q^2 - x^2} = \frac{\pi}{q \sin 2qr} \{ e^i - e^{i \cos 2qr} \cos^s qr \cdot \cos(sqr + i \sin 2qr) \} \quad (\text{H, 159}).$$

$$17) \int \frac{1 - e^{i \cos 2rx} \cos^s rx \cdot \cos(srx + i \sin 2rx)}{\sin 2rx} \frac{x dx}{q^2 - x^2} = -\frac{\pi}{4} e^{i \cos 2qr} \cos^{s-1} qr \frac{\sin(iqr + i \sin 2qr)}{\sin qr} \quad (\text{H, 159}).$$

$$18) \int e^{i \cos 2rx} \cos^{s-1} rx \frac{\sin \{(s+2)rx + i \sin 2rx\}}{\sin rx} \frac{dx}{q^2 - x^2} = \frac{\pi}{q \sin 2qr} \{ e^i - e^{i \cos 2qr} \cos^s qr \cdot \cos \{(s+2)qr + i \sin 2qr\} \} \quad (\text{H, 166}).$$

$$19) \int e^{i \cos 2rx} \cos^{s-1} rx \frac{\cos \{(s+2)rx + i \sin 2rx\}}{\sin rx} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} e^{i \cos 2qr} \cos^{s-1} qr \frac{\sin \{(s+2)qr + i \sin 2qr\}}{\sin qr} \quad (\text{H, 166}).$$

F. Alg. rat. fract. binôme $q^2 + x^2$;

Exponentielle;

TABLE 392.

Lim. 0 et ∞ .

Circ. Dir. au dén. trinôme; [$p^2 < 1$].

$$1) \int e^{s \cos rx} \frac{\sin(s \sin rx)}{1 - 2p \cos rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2(1 - pe^{-qr})(1 - pe^{qr})} (e^{s e^{-qr}} - e^{ps}) \quad (\text{H, 154}).$$

$$2) \int e^{s \cos rx} \frac{\cos(s \sin rx)}{1 - 2p \cos rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{2q(1 - pe^{-qr})(1 - pe^{qr})} \left\{ e^{s e^{-qr}} - \right. \\ \left. - \frac{p}{1 - p^2} (e^{qr} - e^{-qr}) e^{ps} \right\} \quad (\text{H, 154}).$$

$$3) \int e^{s \cos rx} \frac{\sin(s \sin rx + rx)}{1 - 2p \cos rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2(1 - pe^{-qr})(1 - pe^{qr})} (e^{s e^{-qr} - qr} - p e^{ps}) \quad (\text{H, 156}).$$

$$4) \int e^{s \cos rx} \frac{\cos(s \sin rx + rx)}{1 - 2p \cos rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{2q(1 - pe^{-qr})(1 - pe^{qr})} \left\{ e^{s e^{-qr} - qr} - \right. \\ \left. - \frac{p^2}{1 - p^2} (e^{qr} - e^{-qr}) e^{ps} \right\} \quad (\text{H, 156}).$$

$$5) \int e^{t \cos 2rx} \cos^s rx \frac{\sin(srx + t \sin 2rx)}{1 - 2p \cos 2rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+1}(1 - pe^{-2qr})(1 - pe^{2qr})} \\ \{ (1 + e^{-2qr})^s e^{t e^{-2qr}} - (1 + p)^s e^{ps} \} \quad (\text{H, 159}).$$

$$6) \int e^{t \cos 2rx} \cos^s rx \frac{\cos(srx + t \sin 2rx)}{1 - 2p \cos 2rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+1}q(1 - pe^{-2qr})(1 - pe^{2qr})} \\ \left\{ (1 + e^{-2qr})^s e^{t e^{-2qr}} - \frac{p}{1 - p} (e^{2qr} - e^{-2qr})(1 + p)^{s-1} e^{ps} \right\} \quad (\text{H, 158}).$$

$$7) \int e^{t \cos 2rx} \sin^s rx \cdot \cos^u rx \frac{\sin\{\frac{1}{2}s\pi - (s+u)rx - t \sin 2rx\}}{1 - 2p \cos 2rx + p^2} \frac{x dx}{q^2 + x^2} = \\ = \frac{\pi}{2^{s+u+1}(1 - pe^{-2qr})(1 - pe^{2qr})} \{ (1 + p)^u (1 - p)^s e^{ps} - \\ - (1 + e^{-2qr})^u (1 - e^{-2qr})^s e^{t e^{-2qr}} \} \quad (\text{H, 160}).$$

$$8) \int e^{t \cos 2rx} \sin^s rx \cdot \cos^u rx \frac{\cos\{\frac{1}{2}s\pi - (s+u)rx - t \sin 2rx\}}{1 - 2p \cos 2rx + p^2} \frac{dx}{q^2 + x^2} = \\ = \frac{\pi}{2^{s+u+1}q(1 - pe^{-2qr})(1 - pe^{2qr})} \{ (1 + e^{-2qr})^u (1 - e^{-2qr})^s e^{t e^{-2qr}} - \\ - p(1 + p)^{u-1} (1 - p)^{s-1} e^{ps} (e^{2qr} - e^{-2qr}) \} \quad (\text{H, 160}).$$

$$9) \int e^{t \cos 2rx} \cos^s rx \frac{\sin\{(s+2)rx + t \sin 2rx\}}{1 - 2p \cos 2rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+1}(1 - pe^{-2qr})(1 - pe^{2qr})} \\ \{ (1 + e^{-2qr})^s e^{t e^{-2qr} - 2qr} - p(1 + p)^s e^{ps} \} \quad (\text{H, 164}).$$

F. Alg. rat. fract. binôme $q^2 + x^2$;

Exponentielle ;

TABLE 392, suite.

Lim. 0 et ∞ .

Circ. Dir. au dén. trinôme ; $[p^2 < 1]$.

$$10) \int e^{t \cos 2rx} \cos^s rx \frac{\cos \{ (s+2)rx + t \sin 2rx \}}{1 - 2p \cos 2rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+1} q (1 - p e^{-2qr}) (1 - p e^{2qr})} \\ \left\{ (1 + e^{-2qr})^s e^{t e^{-qr} - 2qr} - \frac{2p^2}{1-p} (e^{2qr} - e^{-2qr}) (1+p)^{s-1} e^{pt} \right\} \quad (\text{H, 164}).$$

$$11) \int e^{t \cos 2rx} \sin^s rx \cos^u rx \frac{\sin \{ \frac{1}{2} s\pi - (s+u+2)rx - t \sin 2rx \}}{1 - 2p \cos 2rx + p^2} \frac{x dx}{q^2 + x^2} = \\ = \frac{\pi}{2^{s+u+1} (1 - p e^{-2qr}) (1 - p e^{2qr})} \left\{ (1 + e^{-2qr})^u (1 - e^{-2qr})^s e^{t e^{-qr} - 2qr} - \right. \\ \left. - p (1+p)^u (1-p)^s e^{pt} \right\} \quad (\text{II, 167}).$$

$$12) \int e^{t \cos 2rx} \sin^s rx \cos^u rx \frac{\cos \{ \frac{1}{2} s\pi - (s+u+2)rx - t \sin 2rx \}}{1 - 2p \cos 2rx + p^2} \frac{dx}{q^2 + x^2} = \\ = \frac{\pi}{2^{s+u+1} q (1 - p e^{-2qr}) (1 - p e^{2qr})} \left\{ (1 + e^{-2qr})^u (1 - e^{-2qr})^s e^{t e^{-qr} - 2qr} - \right. \\ \left. - p^2 (1+p)^{u-1} (1-p)^{s-1} e^{pt} (e^{2qr} - e^{-2qr}) \right\} \quad (\text{II, 167}).$$

$$13) \int e^{t \cos ux} \cos^s rx \frac{\sin(srx + t \sin ux) - p \sin(srx + t \sin ux - nx)}{1 - 2p \cos nx + p^2} \frac{x dx}{q^2 + x^2} = \\ = \frac{\pi}{2} \frac{e^{t e^{-qu}}}{1 - p e^{-uq}} \left(\frac{1 + e^{-2qr}}{2} \right)^s - \frac{\pi}{2^{s+1}}$$

$$14) \int e^{t \cos ux} \cos^s rx \frac{\cos(srx + t \sin ux) - p \cos(srx + t \sin ux - nx)}{1 - 2p \cos nx + p^2} \frac{dx}{q^2 + x^2} = \\ = \frac{\pi}{2q} \frac{e^{t e^{-qu}}}{1 - p e^{-uq}} \left(\frac{1 + e^{-2qr}}{2} \right)^s$$

Sur 13) et 14) voyez Malmsten, Nova Acta Upsal. 12, 171.

F. Alg. rat. fract. d'autre forme ;

Exponentielle ;

TABLE 393.

Lim. 0 et ∞ .

Circ. Dir. au dén. trinôme ; $[p^2 < 1]$.

$$1) \int e^{s \cos rx} \frac{\sin(s \sin rx)}{1 - 2p \cos rx + p^2} \frac{dx}{x} = \frac{\pi}{2(1-p)^2} (e^s - e^{ps}) \quad (\text{H, 154}).$$

$$2) \int e^{s \cos rx} \frac{\sin(rx + s \sin rx)}{1 - 2p \cos rx + p^2} \frac{dx}{x} = \frac{\pi}{2(1-p)^2} (e^s - p e^{ps}) \quad (\text{H, 155}).$$

$$3) \int e^{t \cos 2rx} \cos^s rx \frac{\sin(srx + t \sin 2rx)}{1 - 2p \cos 2rx + p^2} \frac{dx}{x} = \frac{\pi}{2^{s+1} (1-p)^2} \{ 2^s e^t - (1+p)^s e^{pt} \} \quad (\text{H, 156}).$$

$$4) \int e^{t \cos 2rx} \sin^s rx \cdot \cos^q rx \frac{\sin \left\{ \frac{1}{2} s \pi - (q+s) rx - t \sin 2rx \right\}}{1-2p \cos 2rx + p^2} \frac{dx}{x} =$$

$$= \frac{\pi}{2^{q+s+1}} (1+p)^q (1-p)^{s-1} e^{pt} \quad (\text{H, 159}).$$

$$5) \int e^{t \cos 2rx} \cos^s rx \frac{\sin \{ (s+2) \sin rx + t \sin 2rx \}}{1-2p \cos 2rx + p^2} \frac{dx}{x} = \frac{\pi}{2^{s+1} (1-p)^2} \{ 2^s e^t - p(1+p)^s e^{tu} \}$$

$$(\text{H, 163}).$$

$$6) \int e^{t \cos 2rx} \sin^s rx \cdot \cos^q rx \frac{\sin \left\{ \frac{1}{2} s \pi - (q+s+2) rx - t \sin 2rx \right\}}{1-2p \cos 2rx + p^2} \frac{dx}{x} =$$

$$= \frac{-p\pi}{2^{q+s+1}} (1+p)^q (1-p)^{s-1} e^{pt} \quad (\text{H, 167}).$$

$$7) \int e^{s \cos rx} \frac{\sin(s \sin rx)}{1-2p \cos rx + p^2} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2(1-2p \cos qr + p^2)} \{ e^{ps} - e^{s \cos qr} \cos(s \sin qr) \}$$

$$(\text{H, 154}).$$

$$8) \int e^{s \cos rx} \frac{\cos(s \sin rx)}{1-2p \cos rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q(1-2p \cos qr + p^2)} \left\{ \frac{2p}{1-p^2} e^{ps} \sin qr + \right.$$

$$\left. + e^{s \cos qr} \sin(s \sin qr) \right\} \quad (\text{H, 154}).$$

$$9) \int e^{s \cos rx} \frac{\sin(s \sin rx + rx)}{1-2p \cos rx + p^2} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2(1-2p \cos qr + p^2)} \{ p e^{ps} - e^{s \cos qr} \cos(s \sin qr + qr) \}$$

$$(\text{H, 156}).$$

$$10) \int e^{s \cos rx} \frac{\cos(s \sin rx + rx)}{1-2p \cos rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q(1-2p \cos qr + p^2)} \left\{ \frac{2p^2}{1-p^2} e^{ps} \sin qr + \right.$$

$$\left. + e^{s \cos qr} \sin(s \sin qr + qr) \right\} \quad (\text{H, 156}).$$

$$11) \int e^{t \cos 2rx} \cos^s rx \frac{\sin(srx + t \sin 2rx)}{1-2p \cos 2rx + p^2} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2^{s+1} (1-2p \cos 2qr + p^2)} \{ (1+p)^s e^{pt} -$$

$$- 2^s e^{t \cos 2qr} \cos^s qr \cdot \cos(sqr + t \sin 2qr) \} \quad (\text{H, 159}).$$

$$12) \int e^{t \cos 2rx} \cos^s rx \frac{\cos(srx + t \sin 2rx)}{1-2p \cos 2rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2^{s+1} q (1-2p \cos 2qr + p^2)}$$

$$\left\{ \frac{2p}{1-p} (1+p)^{s-1} e^{pt} \sin 2qr + 2^s e^{t \cos 2qr} \cos^s qr \cdot \sin(sqr + t \sin 2qr) \right\} \quad (\text{H, 159}).$$

$$13) \int e^{t \cos 2rx} \sin^s rx \cdot \cos^q rx \frac{\sin \left\{ \frac{1}{2} s \pi - (s+u) rx - t \sin 2rx \right\}}{1-2p \cos 2rx + p^2} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2(1-2p \cos 2qr + p^2)}$$

$$\left\{ e^{t \cos 2qr} \sin^s qr \cdot \cos^q qr \cdot \cos \left\{ \frac{1}{2} s \pi - (s+u) qr - t \sin 2qr \right\} - 2^{s-u} (1+p)^s (1-p)^s e^{pt} \right\}$$

$$(\text{H, 160}).$$

F. Alg. rat. fract. d'autre forme;

Exponentielle;

TABLE 393, suite.

Lim. 0 et ∞ .

Circ. Dir. au dén. trinôme; [$p^2 < 1$].

$$14) \int e^{t \cos 2rx} \sin^s rx \cdot \cos^u rx \frac{\cos \left\{ \frac{1}{2} s \pi - (s+u) rx - t \sin 2rx \right\}}{1 - 2p \cos 2rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q(1 - 2p \cos 2qr + p^2)} \\ \left\{ \frac{p}{2^{s+u-1}} (1+p)^{u-1} (1-p)^{s-1} e^{pt} \sin 2qr + e^{t \cos 2qr} \sin^s qr \cdot \cos^u qr \cdot \sin \left\{ \frac{1}{2} s \pi - \right. \right. \\ \left. \left. - (s+u) qr - t \sin 2qr \right\} \right\} \quad (\text{H, 161}).$$

$$15) \int e^{t \cos 2rx} \cos^s rx \frac{\sin \{(s+2)rx + t \sin 2rx\}}{1 - 2p \cos 2rx + p^2} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2^{s+1} (1 - 2p \cos 2qr + p^2)} \\ \left\{ (1+p)^s p e^{pt} - 2^s e^{t \cos 2qr} \cos^s qr \cdot \cos \{(s+2)qr + t \sin 2qr\} \right\} \quad (\text{H, 166}).$$

$$16) \int e^{t \cos 2rx} \cos^s rx \frac{\cos \{(s+2)rx + t \sin 2rx\}}{1 - 2p \cos 2rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2^{s+1} q (1 - 2p \cos 2qr + p^2)} \\ \left\{ \frac{p^2}{1-p} (1+p)^{s-1} e^{pt} \sin 2qr + 2^{s-1} e^{t \cos 2qr} \cos^s qr \cdot \sin \{(s+2)qr + t \sin 2qr\} \right\} \quad (\text{II, 166}).$$

$$17) \int e^{t \cos 2rx} \sin^s rx \cdot \cos^u rx \frac{\sin \left\{ \frac{1}{2} s \pi - (s+u+2) rx - t \sin 2rx \right\}}{1 - 2p \cos 2rx + p^2} \frac{x dx}{q^2 - x^2} = \\ = \frac{\pi}{2(1 - 2p \cos 2qr + p^2)} \left\{ e^{t \cos 2qr} \sin^s qr \cdot \cos^u qr \cdot \cos \left\{ \frac{1}{2} s \pi - (s+u+2) qr - t \sin 2qr \right\} - \right. \\ \left. - \frac{p}{2^{s+u}} (1+p)^u (1-p)^s e^{pu} \right\} \quad (\text{H, 170}).$$

$$18) \int e^{t \cos 2rx} \sin^s rx \cdot \cos^u rx \frac{\cos \left\{ \frac{1}{2} s \pi - (s+u+2) rx - t \sin 2rx \right\}}{1 - 2p \cos 2rx + p^2} \frac{dx}{q^2 - x^2} = \\ = \frac{\pi}{2q(1 - 2p \cos 2qr + p^2)} \left\{ \frac{p^2}{2^{s+u-1}} (1+p)^{u-1} (1-p)^{s-1} e^{pt} \sin 2qr + \right. \\ \left. + e^{t \cos 2qr} \sin^s qr \cdot \cos^u qr \cdot \sin \left\{ \frac{1}{2} s \pi - (s+u+2) qr - t \sin 2qr \right\} \right\} \\ (\text{H, 170}).$$

F. Algèbr. irrat. ent.;

Exponentielle;

TABLE 394.

Lim. 0 et ∞ .

Circulaire Directe.

$$1) \int e^{-qx} \sin px \cdot dx \sqrt{x} = \frac{1}{4} \sqrt{-q^2 + 3qp^2 + \sqrt{p^2 + q^2}^3} \cdot \sqrt{\frac{2\pi}{(p^2 + q^2)^3}} \quad (\text{IV, 513}).$$

$$2) \int e^{-qx} \sin px \cdot x dx \sqrt{x} = \frac{3}{8} \sqrt{-q^2 + 10q^2 p^2 - 5qp^4 + \sqrt{p^2 + q^2}^5} \cdot \sqrt{\frac{2\pi}{(p^2 + q^2)^5}} \\ (\text{IV, 513}).$$

F. Algèbr. irrat. ent.;
Exponentielle;
Circulaire Directe.

TABLE 394, suite.

Lim. 0 et ∞ .

$$3) \int e^{-qx} \sin px \cdot x^2 dx \sqrt{x} = \frac{15}{16} \sqrt{\{-q^7 + 21q^5 p^2 - 35q^3 p^4 + 7qp^6 + \sqrt{p^2 + q^2}^7\}} \cdot \sqrt{\frac{2\pi}{(p^2 + q^2)^{7/2}}} \quad (\text{IV, 513}).$$

$$4) \int e^{-qx} \cos px \cdot dx \sqrt{x} = \frac{1}{4} \sqrt{\{q^3 - 3qp^2 + \sqrt{p^2 + q^2}^3\}} \cdot \sqrt{\frac{2\pi}{(p^2 + q^2)^{3/2}}} \quad (\text{IV, 513}).$$

$$5) \int e^{-qx} \cos px \cdot x dx \sqrt{x} = \frac{3}{8} \sqrt{\{q^5 - 10q^3 p^2 + 5qp^4 + \sqrt{p^2 + q^2}^5\}} \cdot \sqrt{\frac{2\pi}{(p^2 + q^2)^{5/2}}} \quad (\text{IV, 513}).$$

$$6) \int e^{-qx} \cos px \cdot x^2 dx \sqrt{x} = \frac{15}{16} \sqrt{\{q^7 - 21q^5 p^2 + 35q^3 p^4 - 7qp^6 + \sqrt{p^2 + q^2}^7\}} \cdot \sqrt{\frac{2\pi}{(p^2 + q^2)^{7/2}}} \quad (\text{IV, 513}).$$

F. Algèbr. irrat. fract.;
Exponentielle;
Circulaire Directe.

TABLE 395.

Lim. 0 et ∞ .

$$1) \int e^{-qx} \sin px \frac{dx}{\sqrt{x}} = \sqrt{\left\{\frac{\pi}{2} \frac{\sqrt{p^2 + q^2} - q}{p^2 + q^2}\right\}} \quad (\text{VIII, 529}).$$

$$2) \int e^{-qx} \cos px \frac{dx}{\sqrt{x}} = \sqrt{\left\{\frac{\pi}{2} \frac{\sqrt{p^2 + q^2} + q}{p^2 + q^2}\right\}} \quad (\text{VIII, 529}).$$

$$3) \int e^{-qx} \cos(2\sqrt{p}x) \frac{dx}{\sqrt{x}} = e^{-\frac{p}{q}} \sqrt{\frac{\pi}{q}} \quad (\text{VIII, 514}).$$

$$4) \int e^{-p^2 x - \frac{q^2}{x}} \sin rx \frac{dx}{\sqrt{x}} = e^{-2q\lambda} (\lambda \sin 2q\mu + \mu \cos 2q\mu) \sqrt{\frac{\pi}{r^2 + p^2}} \quad (\text{VIII, 451}).$$

$$5) \int e^{-p^2 x - \frac{q^2}{x}} \cos rx \frac{dx}{\sqrt{x}} = e^{-2q\lambda} (\lambda \cos 2q\mu - \mu \sin 2q\mu) \sqrt{\frac{\pi}{r^2 + p^2}} \quad (\text{VIII, 451}).$$

$$\text{Où } 2\lambda = \sqrt{\{\sqrt{r^2 + p^2} + p^2\}} + \sqrt{\{\sqrt{r^2 + p^2} - p^2\}}, \\ 2\mu = \sqrt{\{\sqrt{r^2 + p^2} + p^2\}} - \sqrt{\{\sqrt{r^2 + p^2} - p^2\}}$$

$$6) \int \frac{\sin px}{e^x + e^{-x}} \frac{dx}{\sqrt{x}} = \sum_0^{\infty} (-1)^n \sqrt{\left\{\frac{\pi}{2} \frac{\sqrt{p^2 + (2n+1)^2} - 2n-1}{p^2 + (2n+1)^2}\right\}} \quad (\text{VIII, 487}).$$

$$7) \int \frac{\sin px}{e^x + 1 + e^{-x}} \frac{dx}{\sqrt{x}} = \operatorname{Cosec} \frac{\pi}{3} \cdot \sum_1^{\infty} (-1)^{n-1} \sin \frac{n\pi}{3} \cdot \sqrt{\left\{\frac{\pi}{2} \frac{\sqrt{p^2 + n^2} - n}{p^2 + n^2}\right\}} \quad (\text{VIII, 487}).$$

$$8) \int \frac{\cos px}{e^x + e^{-x}} \frac{dx}{\sqrt{x}} = \sum_0^{\infty} (-1)^n \sqrt{\left\{\frac{\pi}{2} \frac{\sqrt{p^2 + (2n+1)^2} + 2n+1}{p^2 + (2n+1)^2}\right\}} \quad (\text{VIII, 487}).$$

- 9) $\int \frac{\cos px}{e^x + 1 + e^{-x}} \frac{dx}{\sqrt{x}} = \operatorname{Cosec} \frac{\pi}{3} \cdot \sum_1^{\infty} (-1)^{n-1} \sin \frac{n\pi}{3} \cdot \sqrt{\left\{ \frac{\pi}{2} \frac{\sqrt{p^2 + n^2} + n}{p^2 + n^2} \right\}}$ (VIII, 487).
- 10) $\int e^{-qx} \sin qx \frac{dx}{x\sqrt{x}} = -\sqrt{\{(\sqrt{2}-1)2q\pi\}}$ (IV, 515).
- 11) $\int e^{-qx} \sin px \frac{dx}{x\sqrt{x}} = -\sqrt{[2\pi\{-q + \sqrt{p^2 + q^2}\}]}$ (IV, 515).
- 12) $\int e^{-q\sqrt{x}} \frac{\{p + \sqrt{x}\} \cos(q\sqrt{x}) - \sin(q\sqrt{x}) \cdot \sqrt{x}}{2x + 2p\sqrt{x} + p^2} dx = 0$ (IV, 516).
- 13) $\int e^{-q\sqrt{x}} \frac{(p + \sqrt{x}) \cos(q\sqrt{x}) - \sin(q\sqrt{x}) \cdot \sqrt{x}}{2x + 2p\sqrt{x} + p^2} \frac{dx}{r^2 - x^2} = \frac{(p + \sqrt{r}) \sin(q\sqrt{r}) + \cos(q\sqrt{r}) \cdot \sqrt{r}}{2r + 2p\sqrt{r} + p^2} \frac{\pi e^{-q\sqrt{r}}}{2r}$ (IV, 516).

- 1) $\int e^{-px} \sin x \cdot x dx = \frac{1}{(1+p^2)^2} \left[\left\{ 1 - p^2 - \frac{1}{2} p \pi (1 + p^2) \right\} e^{-\frac{1}{2} p \pi} + 2p \right]$ (VIII, 566).
- 2) $\int e^{-px} \cos x \cdot x dx = \frac{1}{(1+p^2)^2} \left[p^2 - 1 + \left\{ \frac{\pi}{2} (1 + p^2) + 2p \right\} e^{-\frac{1}{2} p \pi} \right]$ (VIII, 566).
- 3) $\int e^{-q\tau_9 x} \frac{x dx}{\cos^2 x} = \frac{1}{q} \left[\operatorname{Ci}(q) \cdot \sin q + \cos q \cdot \left\{ \frac{\pi}{2} - \operatorname{Si}(q) \right\} \right]$ V. T. 271, N. 2.
- 4) $\int e^{-q\tau_9 x} \frac{\sin x + \cos x}{\cos^3 x} x dx = \sin q \cdot \left\{ \frac{\pi}{2} - \operatorname{Si}(q) \right\} - \operatorname{Ci}(q) \cdot \cos q$ V. T. 271, N. 3.
- 5) $\int e^{-\tau_9^2 x} \sin 4x \frac{x dx}{\cos^5 x} = -\frac{3}{2} \sqrt{\pi}$ V. T. 272, N. 9.
- 6) $\int e^{-\tau_9^2 x} \sin^3 2x \frac{x dx}{\cos^5 x} = 2 \sqrt{\pi}$ V. T. 272, N. 9.
- 7) $\int e^{-q\tau_9^2 x} \frac{q - \cos^2 x}{\cos^4 x \cdot \cot x} x dx = \frac{1}{4} \sqrt{\frac{\pi}{q}}$ V. T. 272, N. 9.
- 8) $\int e^{-q\tau_9^2 x} \frac{q - 2 \cos^2 x}{\cos^6 x \cdot \cot x} x dx = \frac{1 + 2q}{8} \sqrt{\frac{\pi}{q}}$ V. T. 272, N. 11.

F. Algébrique;
Exponentielle;
Circulaire Directe.

TABLE 396, suite.

Lim. 0 et $\frac{\pi}{2}$.

- 9) $\int \frac{e^{\frac{1}{2}\pi T_g x} - e^{-\frac{1}{2}\pi T_g x}}{(e^{\frac{1}{2}\pi T_g x} + e^{-\frac{1}{2}\pi T_g x})^2} \frac{x dx}{\cos^2 x} = \frac{\sqrt{2}}{\pi} \left\{ \pi + \frac{\sqrt{2}-1}{\sqrt{2}+1} \right\}$ V. T. 274, N. 1.
- 10) $\int \frac{e^{\frac{1}{2}\pi T_g x} - e^{-\frac{1}{2}\pi T_g x}}{(e^{\frac{1}{2}\pi T_g x} + e^{-\frac{1}{2}\pi T_g x})^2} \frac{x dx}{\cos^2 x} = \frac{1}{\pi} \log 2$ V. T. 274, N. 2.
- 11) $\int \frac{e^{\pi T_g x} - e^{-\pi T_g x}}{(e^{\pi T_g x} + e^{-\pi T_g x})^2} \frac{x dx}{\cos^2 x} = \frac{4-\pi}{4\pi}$ V. T. 274, N. 3.

F. Algébrique;
Exponentielle;
Circulaire Directe.

TABLE 397.

Lim. diverses.

- 1) $\int_0^1 \left(e^{px} - \frac{e^{qx} + e^{-qx}}{2} \right) \frac{dx}{x} = \log \left(\frac{q}{p} \right) + Ci(p) - \frac{1}{2} Ei(q) - \frac{1}{2} Ei(-q)$ (IV, 516*).
- 2) $\int_{-1}^1 \frac{e^{p\sqrt{1-x^2}} + e^{-p\sqrt{1-x^2}}}{s-tx} \frac{\sin px}{\sqrt{1-x^2}} dx = \frac{\pi}{2\sqrt{s^2-t^2}} \sin \left\{ p \frac{s-\sqrt{s^2-t^2}}{2t} \right\} [t < s]$ (VIII, 549).
- 3) $\int_{-1}^1 \frac{e^{p\sqrt{1-x^2}} + e^{-p\sqrt{1-x^2}}}{s-tx} \frac{\cos px}{\sqrt{1-x^2}} dx = \frac{\pi}{2\sqrt{s^2-t^2}} \cos \left\{ p \frac{s-\sqrt{s^2-t^2}}{2t} \right\} [t < s]$ (VIII, 549).
- 4) $\int_{-\infty}^{\infty} e^{-px^2+2qx\cos\lambda} \sin(2qx\sin\lambda) \cdot x dx = \frac{q\pi}{p} e^{\frac{q^2}{p}\cos 2\lambda} \sin \left(\lambda + \frac{q^2}{p} \sin 2\lambda \right) \cdot \sqrt{\frac{\pi}{p}}$ (IV, 516).
- 5) $\int_{-\infty}^{\infty} e^{-px^2+2qx\cos\lambda} \cos(2qx\sin\lambda) \cdot x dx = \frac{q\pi}{p} e^{\frac{q^2}{p}\cos 2\lambda} \cos \left(\lambda + \frac{q^2}{p} \sin 2\lambda \right) \cdot \sqrt{\frac{\pi}{p}}$ (IV, 516).
- 6) $\int_{-\infty}^{\infty} e^{px^2} \cos qx \frac{dx}{r^2+x^2} = \frac{\pi}{2r} e^{-qr} (e^{pr} + e^{-pr}) [q > p]$ Lobatto, N. V. Amst. 6, 1.
- 7) $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} e^{(q+1)x} \cos^{q-1} x \cdot x dx = \frac{\pi i}{2^q q}$ (IV, 516).
- 8) $\int_{-\frac{1}{2}\pi}^{\frac{1}{2}\pi} e^{(q+2a)x} \cos^q x \cdot x dx = \frac{\pi}{i} \frac{\cos a\pi}{2^{q+1}} \frac{1^{a-1/1}}{q^{a-1/1}}$ (VIII, 430).
- 9) $\int_{\frac{\pi}{2}}^{\infty} e^{-px} \sin x \cdot x dx = e^{-\frac{1}{2}p\pi} \frac{(1+p^2)^{\frac{1}{2}} p\pi + p^2 - 1}{(1+p^2)^2}$ (VIII, 566).
- 10) $\int_{\frac{\pi}{2}}^{\infty} e^{-px} \cos x \cdot x dx = -e^{-\frac{1}{2}p\pi} \frac{\frac{1}{2}\pi(1+p^2) + 2p}{(1+p^2)^2}$ (VIII, 566).

F. Algébrique; Exponentielle; Circulaire Directe.	$\left\{ \begin{array}{l} \text{Intégr. Lim.} \\ [\text{Lim. } k = \infty]. \end{array} \right.$	TABLE 398.	Lim. diverses.
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- 1) $\int_0^\infty e^{-\frac{x}{k}} \sin qx \cdot x^{p-1} dx = q^{-p} \Gamma(p) \sin \frac{1}{2} p \pi$ (IV, 498).
- 2) $\int_0^\infty e^{-\frac{x}{k}} \cos qx \cdot x^{p-1} dx = q^{-p} \Gamma(p) \cos \frac{1}{2} p \pi$ (IV, 498).
- 3) $\int_0^\infty \frac{e^{-kx} \sin px}{e^x + e^{-x}} \frac{dx}{\sqrt{x}} = 0$ (VIII, 318).
- 4) $\int_0^\infty \frac{e^{-kx} \cos px}{e^x + e^{-x}} \frac{dx}{\sqrt{x}} = 0$ (VIII, 318).
- 5) $\int_0^\infty \frac{e^{-kx} \sin px}{e^x + 1 + e^{-x}} \frac{dx}{\sqrt{x}} = 0$ (VIII, 318).
- 6) $\int_0^\infty \frac{e^{-kx} \cos px}{e^x + 1 + e^{-x}} \frac{dx}{\sqrt{x}} = 0$ (VIII, 318).
- 7) $\int_0^a \frac{e^{px} + e^{-px}}{e^{rx} - e^{-rx}} \frac{\sin kx}{q^2 + x^2} dx = 0$ [$0 < a < \infty$] (VIII, 378).
- 8) $\int_0^a \frac{e^{px} - e^{-px}}{e^{rx} - e^{-rx}} \frac{\cos kx}{q^2 + x^2} dx = 0$ [$0 < a < \infty$] (VIII, 378).

F. Algébrique; Exponentielle; Circulaire Inverse.	TABLE 399.	Lim. 0 et ∞ .
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- 1) $\int e^{-px} \operatorname{Arctg} \frac{x}{q} \cdot x dx = \frac{1}{p^3} \left[\operatorname{Ci}(pq) \cdot \sin pq - \left(\operatorname{Si}(pq) - \frac{\pi}{2} \right) \cos pq - pq \left\{ \operatorname{Ci}(pq) \cdot \cos pq + \left(\operatorname{Si}(pq) - \frac{\pi}{2} \right) \sin pq \right\} \right]$ (VIII, 598).
- 2) $\int e^{-px} \operatorname{Arctg} \frac{x}{q} \cdot x^{2a} dx = \frac{1}{p^{2a+1}} \left[\left\{ \operatorname{Ci}(pq) \cdot \sin pq - \left(\operatorname{Si}(pq) - \frac{\pi}{2} \right) \cos pq \right\} 1^{2a+1} \sum_0^a \frac{(-p^2 q^2)^n}{1^{2n+1}} - pq \left\{ \operatorname{Ci}(pq) \cdot \cos pq + \left(\operatorname{Si}(pq) - \frac{\pi}{2} \right) \sin pq \right\} 1^{2a+1} \sum_0^{a-1} \frac{(-p^2 q^2)^n}{1^{2n+1/2}} + 3^{2a-2/1} pq \sum_1^a \left\{ \frac{1}{1^{2n+1}} \sum_0^{n-1} 1^{2n-2m+1/2} (-p^2 q^2)^m \right\} + 4^{2a-3/1} pq \sum_1^a \left\{ \frac{1}{1^{2n+1}} \sum_0^{n-1} 1^{2n-2m-1/2} (-p^2 q^2)^m \right\} \right]$ (IV, 517).
- 3) $\int e^{-px} \operatorname{Arctg} \frac{x}{q} \cdot x^{2a+1} dx = \frac{1}{p^{2a+2}} \left[\left\{ \operatorname{Ci}(pq) \cdot \sin pq - \left(\operatorname{Si}(pq) - \frac{\pi}{2} \right) \cos pq \right\} 1^{2a+1} \sum_0^a \frac{(-p^2 q^2)^n}{1^{2n+1}} - pq \left\{ \operatorname{Ci}(pq) \cdot \cos pq + \left(\operatorname{Si}(pq) - \frac{\pi}{2} \right) \sin pq \right\} 1^{2a+1} \sum_0^a \frac{(-p^2 q^2)^n}{1^{2n+1/2}} + 3^{2a-1/1} pq \sum_1^{a+1} \left\{ \frac{1}{1^{2n+1/2}} \sum_0^{n-1} 1^{2n-2m+1/2} (-p^2 q^2)^m \right\} + 4^{2a-2/1} pq \sum_1^a \left\{ \frac{1}{1^{2n+1}} \sum_0^{n-1} 1^{2n-2m-1/2} (-p^2 q^2)^m \right\} \right]$ (IV, 517).

- $$4) \int e^{-px} \operatorname{Arccot} \frac{x}{q} \cdot x dx = \frac{1}{p^2} \left[\pi \operatorname{Sin}^2 \frac{1}{2} pq - \operatorname{Ci}(pq) \cdot \operatorname{Sin} pq + \operatorname{Si}(pq) \cdot \operatorname{Cos} pq + pq \left\{ \operatorname{Ci}(pq) \cdot \operatorname{Cos} pq + \left(\operatorname{Si}(pq) - \frac{\pi}{2} \right) \operatorname{Sin} pq \right\} \right] \text{ (VIII, 598).}$$
- $$5) \int \operatorname{Arctg} \frac{x}{q} \frac{(2\pi x - 1)e^{i\pi x} + 1}{(e^{2\pi x} - 1)^2} dx = -\frac{1}{4} + \frac{1}{2} q \operatorname{I} q - \frac{1}{2} q Z'(q) \text{ V. T. 97, N. 20.}$$
- $$6) \int \operatorname{Arctg} x \frac{(\pi x - 1)e^{\pi x} + (\pi x + 1)e^{-\pi x}}{(e^{2x} - e^{-2x})^2} dx = \frac{1}{2} \left(\operatorname{I} 2 - \frac{1}{2} \right) \text{ V. T. 97, N. 7.}$$
- $$7) \int \operatorname{Arctg} x \frac{e^{-i\pi x} + 2\pi x - 1}{(e^{\pi x} - e^{-\pi x})^2} dx = \frac{1}{2} \Lambda - \frac{1}{4} \text{ V. T. 97, N. 14.}$$
- $$8) \int \operatorname{Arctg} x \frac{e^{-iqx} + 2qx - 1}{(e^{ix} - e^{-ix})^2} dx = \frac{1}{2} \operatorname{I} \frac{q}{\pi} + \frac{\pi}{4q} - \frac{1}{2} Z' \left(\frac{\pi + q}{\pi} \right) \text{ V. T. 97, N. 15.}$$
- $$9) \int \operatorname{Arctg} x \frac{\pi x (e^{\frac{1}{2}\pi x} + e^{-\frac{1}{2}\pi x}) - 4(e^{\frac{1}{2}\pi x} - e^{-\frac{1}{2}\pi x})}{(e^{\frac{1}{2}\pi x} - e^{-\frac{1}{2}\pi x})^2} dx = \pi \sqrt{2} - 4 + \sqrt{2} \cdot \operatorname{I} \frac{\sqrt{2} + 1}{\sqrt{2} - 1} \text{ V. T. 97, N. 9.}$$
- $$10) \int \operatorname{Arctg} x \frac{(e^{\frac{1}{2}\pi x} + e^{-\frac{1}{2}\pi x})\pi x - 2(e^{\frac{1}{2}\pi x} - e^{-\frac{1}{2}\pi x})}{(e^{\frac{1}{2}\pi x} - e^{-\frac{1}{2}\pi x})^2} dx = \frac{1}{2} \pi - 1 \text{ V. T. 97, N. 8.}$$
- $$11) \int \operatorname{Arctg} \left(\frac{e^{qx} - e^{px}}{1 + e^{(p+q)x}} \right) \frac{dx}{x} = \frac{\pi}{4} \operatorname{I} \frac{q}{p} \text{ (VIII, 279).}$$
- $$12) \int \left(\frac{\operatorname{Arctg} qx}{1 - e^{-qrx}} - \frac{\operatorname{Arctg} px}{1 - e^{-prx}} \right) \frac{dx}{x} = \left(\frac{\pi}{2} - \frac{1}{r} \right) \operatorname{I} \frac{q}{p} \text{ (VIII, 279).}$$
- $$13) \int \{ \operatorname{Arctg} ((e^px)) - \operatorname{Arctg} ((e^qx)) \} \frac{dx}{x} = \frac{\pi}{4} \operatorname{I} \frac{q}{p} \text{ (VIII, 436).}$$
- $$14) \int \{ \operatorname{Arctg} ((r + e^px)) - \operatorname{Arctg} ((r + e^qx)) \} \frac{dx}{x} = \operatorname{Arccot}(r + 1) \cdot \operatorname{I} \frac{p}{q} \text{ (VIII, 436).}$$
- $$15) \int \{ e^{\operatorname{Arctg}((px))} - e^{\operatorname{Arctg}((qx))} \} \frac{dx}{x} = e^{u\pi} (e^{\frac{1}{2}\pi} - 1) \operatorname{I} \frac{p}{q} \text{ (VIII, 436). Où } u \text{ indéterminé.}$$
- $$16) \int e^{-px} \operatorname{Arctg} \frac{x}{q} \frac{px + pq + 1}{(x + q)^2} dx = \frac{1}{2q} \left[-e^{pq} \operatorname{Ei}(-pq) + \operatorname{Ci}(pq) \cdot (\operatorname{Sin} pq + \operatorname{Cos} pq) + \left(\operatorname{Si}(pq) - \frac{\pi}{2} \right) (\operatorname{Sin} pq - \operatorname{Cos} pq) \right] \text{ (IV, 517).}$$
- $$17) \int e^{-px} \operatorname{Arctg} \frac{x}{q} \frac{px - pq + 1}{(x - q)^2} dx = \frac{1}{2q} \left[-e^{-pq} \operatorname{Ei}(pq) + \operatorname{Ci}(pq) \cdot (\operatorname{Cos} pq - \operatorname{Sin} pq) + \left(\operatorname{Si}(pq) - \frac{\pi}{2} \right) (\operatorname{Sin} pq + \operatorname{Cos} pq) \right] \text{ (IV, 517).}$$

F. Algébrique;

Exponentielle;

TABLE 399, suite.

Lim. 0 et ∞ .

Circulaire Inverse.

$$18) \int e^{-px} \operatorname{Arctg} \frac{x}{q} \frac{(pq+1)x + pq^2 + 2q}{(x+q)^2} x dx = \frac{1}{2p} \left[pq e^{-pq} \operatorname{Ei}(-pq) + (pq+2) \left\{ \operatorname{Ci}(pq) \cdot \operatorname{Sin} pq - \left(\operatorname{Si}(pq) - \frac{\pi}{2} \right) \operatorname{Cos} pq \right\} - pq \left\{ \operatorname{Ci}(pq) \cdot \operatorname{Cos} pq + \left(\operatorname{Si}(pq) - \frac{\pi}{2} \right) \operatorname{Sin} pq \right\} \right] \quad (\text{IV, 517}).$$

$$19) \int e^{-px} \operatorname{Arctg} \frac{x}{q} \frac{(pq-1)x - pq^2 + 2q}{(x-q)^2} x dx = \frac{1}{2p} \left[-pq e^{-pq} \operatorname{Ei}(pq) + (pq-2) \left\{ \operatorname{Ci}(pq) \cdot \operatorname{Sin} pq - \left(\operatorname{Si}(pq) - \frac{\pi}{2} \right) \operatorname{Cos} pq \right\} + pq \left\{ \operatorname{Ci}(pq) \cdot \operatorname{Cos} pq + \left(\operatorname{Si}(pq) - \frac{\pi}{2} \right) \operatorname{Sin} pq \right\} \right] \quad (\text{IV, 517}).$$

$$20) \int e^{-(\operatorname{Arctg} x)^2} (\operatorname{Arctg} x)^{2a} \frac{dx}{1+x^2} = \left(\frac{\pi}{2} \right)^{2a+1} \sum_{n=0}^{\infty} \frac{1}{(2a+2n+1) 1^{n/2}} \left(-\frac{\pi^2}{4} \right)^n \quad (\text{IV, 518}).$$

$$21) \int e^{-px} \operatorname{Arctg} \frac{x}{q} \frac{p(x^2+q^2) \operatorname{Arctg} \frac{x}{q} - 2q}{x^2+q^2} dx = 0 \quad (\text{IV, 517}).$$

$$22) \int e^{-px} \operatorname{Arctg} \frac{x}{q} \frac{px^2 + 2x + pq^2}{(x^2+q^2)^2} dx = \frac{1}{2q^2} \left[\operatorname{Ci}(pq) \cdot \operatorname{Sin} pq - \left(\operatorname{Si}(pq) - \frac{1}{2} \pi \right) \operatorname{Cos} pq + pq \left\{ \operatorname{Ci}(pq) \cdot \operatorname{Cos} pq + \left(\operatorname{Si}(pq) - \frac{\pi}{2} \right) \operatorname{Sin} pq \right\} \right] \quad (\text{IV, 518}).$$

$$23) \int e^{-px} \operatorname{Arctg} \frac{x}{q} \frac{px^2 + x^2 + pq^2 x - q^2}{(x^2+q^2)^2} dx = \frac{1}{2q} \left[1 - pq \left\{ \operatorname{Ci}(pq) \cdot \operatorname{Sin} pq - \left(\operatorname{Si}(pq) - \frac{\pi}{2} \right) \operatorname{Cos} pq \right\} \right] \quad (\text{IV, 518}).$$

F. Algébrique;

Exponentielle;

TABLE 400.

Lim. 0 et ∞ .

Autre Fonction.

$$1) \int e^{-x} \operatorname{li}(e^x) \cdot x^{p-1} dx = -\pi \operatorname{Cot} p \pi \cdot \Gamma(p) \quad (\text{VIII, 461}).$$

$$2) \int e^x \operatorname{li}(e^{-x}) \cdot x^{p-1} dx = -\pi \operatorname{Cosec} p \pi \cdot \Gamma(p) \quad (\text{VIII, 459}).$$

$$3) \int \operatorname{li}(e^{-x}) \cdot x^{p-1} dx = -\frac{1}{p} \Gamma(p) [0 \leq p \leq 1] \quad (\text{VIII, 460}).$$

$$4) \int e^{-px} \operatorname{li}(e^{-x}) \frac{dx}{\sqrt{x}} = -2 \sqrt{\frac{\pi}{p}} \cdot \operatorname{li} \left\{ \sqrt{p} + \sqrt{1+p} \right\} [0 < p < 1] \quad (\text{VIII, 460}).$$

F. Algébrique;

Exponentielle;

TABLE 400, suite.

Lim. 0 et ∞ .

Autre Fonction.

$$5) \int e^{qx} \operatorname{Li}(e^{-x}) \frac{dx}{\sqrt{x}} = -2 \operatorname{Arcsin}(\sqrt{p}) \cdot \sqrt{\frac{\pi}{p}} [0 < p < 1] \text{ (VIII, 460).}$$

$$6) \int \left\{ e^{-rx} \frac{\Gamma(px+q)\Gamma(rx+s)}{\Gamma\{(p+r)x+q+s\}} - e^{-tx} \frac{\Gamma\left(\frac{p}{r}x+q\right)\Gamma(tx+s)}{\Gamma\left\{\left(\frac{p}{r}+1\right)tx+q+s\right\}} \right\} \frac{dx}{x} = \frac{\Gamma(q)\Gamma(s)}{\Gamma(q+s)} \frac{p}{r}$$

Winckler, Sitz. Ber. Wien. 21, 389.

F. Algèbr. rat. ent.;

Logarithmique;

TABLE 401.

Lim. 0 et 1.

Circul. Directe de Log.

$$1) \int \sin(q \log x) \cdot x^{p-1} dx = \frac{-q}{p^2+q^2} \text{ V. T. 261, N. 1.}$$

$$2) \int \cos(q \log x) \cdot x^{p-1} dx = \frac{p}{p^2+q^2} \text{ V. T. 261, N. 2.}$$

$$3) \int \sin(q \log x) \cdot (\log x)^{r-1} \cdot x^{p-1} dx = \frac{(-1)^r}{(p^2+q^2)^{\frac{1}{2}r}} \Gamma(r) \sin\left(r \operatorname{Arctg} \frac{q}{p}\right) \text{ V. T. 361, N. 9.}$$

$$4) \int \cos(q \log x) \cdot (\log x)^{r-1} \cdot x^{p-1} dx = \frac{(-1)^{r-1}}{(p^2+q^2)^{\frac{1}{2}r}} \Gamma(r) \cos\left(r \operatorname{Arctg} \frac{q}{p}\right) \text{ V. T. 361, N. 10.}$$

$$5) \int \sin^{2a}(\log x) \cdot x^{p-1} dx = \frac{1^{2a/1}}{(p^2+2^2)(p^2+4^2)\dots\{p^2+(2a)^2\}} \frac{1}{p} \text{ V. T. 262, N. 1.}$$

$$6) \int \sin^{2a+1}(\log x) \cdot x^{p-1} dx = \frac{-1^{2a+1/1}}{(p^2+1^2)(p^2+3^2)\dots\{p^2+(2a+1)^2\}} \text{ V. T. 262, N. 2.}$$

$$7) \int \cos^{2a}(\log x) \cdot x^{p-1} dx = \frac{1}{p} \frac{1^{2a/1}}{(p^2+2^2)(p^2+4^2)\dots\{p^2+(2a)^2\}} \left\{ 1 + \frac{p^2}{1 \cdot 2} + \frac{p^2}{1 \cdot 2} \frac{p^2+2^2}{3 \cdot 4} + \dots + \frac{p^2(p^2+2^2)\dots\{p^2+(2a-2)^2\}}{1^{2a/1}} \right\} \text{ V. T. 262, N. 3.}$$

$$8) \int \cos^{2a+1}(\log x) \cdot x^{p-1} dx = p \frac{1^{2a+1/1}}{(p^2+1^2)(p^2+3^2)\dots\{p^2+(2a+1)^2\}} \left\{ 1 + \frac{p^2+1^2}{1 \cdot 2 \cdot 3} + \dots + \frac{(p^2+1^2)(p^2+3^2)\dots\{p^2+(2a-1)^2\}}{1^{2a+1/1}} \right\} \text{ V. T. 262, N. 4.}$$

$$9) \int \sin(q \log x) \cdot \log \frac{1}{x} \cdot x^{p-1} dx = \frac{1}{p^2+q^2} \left\{ -p \operatorname{Arctg} \frac{q}{p} + \frac{1}{2} q \log(p^2+q^2) + qA \right\} \text{ V. T. 467, N. 1.}$$

$$10) \int \cos(q \ell x) \cdot \ell \ell \frac{1}{x} \cdot x^{p-1} dx = \frac{1}{p^2 + q^2} \left\{ q \operatorname{Arctg} \frac{q}{p} + \frac{1}{2} p \ell (p^2 + q^2) + p A \right\} \text{ V. T. 467, N. 2.}$$

$$11) \int \cot(q \ell x) \cdot x^{p-1} dx = 4q \sum_1^{\infty} \frac{n}{p^2 + 4n^2 q^2} \text{ V. T. 261, N. 8.}$$

$$12) \int \sin \{ (q \ell x)^2 \} \cdot x^{2p-1} dx = \frac{1}{4q} \left\{ \cos \left(\frac{p^2}{q^2} \right) + \sin \left(\frac{p^2}{q^2} \right) \right\} \sqrt{2\pi} - \frac{p}{q^2} \left\{ \cos \left(\frac{p^2}{q^2} \right) \cdot \sum_0^{\infty} \frac{(-1)^n}{(4n+1) 1^{2n+1/2}} \right. \\ \left. \left(\frac{p}{q} \right)^{4n} + \sin \left(\frac{p^2}{q^2} \right) \cdot \sum_1^{\infty} \frac{(-1)^n}{(4n-1) 1^{2n-1/2}} \left(\frac{p}{q} \right)^{4n-2} \right\} \text{ V. T. 262, N. 15.}$$

$$13) \int \cos \{ (q \ell x)^2 \} \cdot x^{2p-1} dx = \frac{1}{4q} \left\{ \cos \left(\frac{p^2}{q^2} \right) - \sin \left(\frac{p^2}{q^2} \right) \right\} \sqrt{2\pi} - \frac{p}{q^2} \left\{ \sin \left(\frac{p^2}{q^2} \right) \cdot \sum_0^{\infty} \frac{(-1)^n}{(4n+1) 1^{2n+1/2}} \right. \\ \left. \left(\frac{p}{q} \right)^{4n} - \cos \left(\frac{p^2}{q^2} \right) \cdot \sum_1^{\infty} \frac{(-1)^n}{(4n-1) 1^{2n-1/2}} \left(\frac{p}{q} \right)^{4n-2} \right\} \text{ V. T. 262, N. 16.}$$

$$14) \int \sin \{ p^2 - (\ell x)^2 \} \cdot x^{2p-1} dx = -\frac{\pi}{2\sqrt{2}} - p \sum_0^{\infty} \frac{(-p^4)^n \cos(2p^2)}{(4n+1) 1^{2n+1/2}} - \frac{1}{p^2} \sum_1^{\infty} \frac{(-p^4)^n \sin(2p^2)}{(4n-1) 1^{2n-1/2}} \\ \text{ V. T. 401, N. 12, 13.}$$

$$15) \int \cos \{ p^2 - (\ell x)^2 \} \cdot x^{2p-1} dx = \frac{\pi}{2\sqrt{2}} - p \sum_0^{\infty} \frac{(-p^4)^n \sin(2p^2)}{(4n+1) 1^{2n+1/2}} - \frac{1}{p^2} \sum_1^{\infty} \frac{(-p^4)^n \cos(2p^2)}{(4n-1) 1^{2n-1/2}} \\ \text{ V. T. 401, N. 12, 13.}$$

$$16) \int \sin^a(\ell x) \cdot x^{p-1} dx = \frac{(-1)^a - e^{p\pi}}{\Gamma\left(\frac{a+p^2}{2} + 1\right) \Gamma\left(\frac{a-p^2}{2} + 1\right)} \frac{\pi}{2} 1^{a+1} e^{1/p^2} \text{ (IV, 520).}$$

$$17) \int \cos \left(q \sqrt{\ell \frac{1}{x}} \right) \cdot x^{p-1} dx = \frac{1}{p} + \frac{1}{2p} \sum_1^{\infty} \frac{(-1)^n}{n^{n/2}} \left(\frac{q^2}{p} \right)^n \text{ V. T. 362, N. 2.}$$

$$18) \int \sin(q \ell x) \cdot x^{p-1} \sqrt{\ell \frac{1}{x}} \cdot dx = -\frac{1}{4} \sqrt{\left[\frac{2\pi}{(p^2 + q^2)^2} \{ -p^2 + 3pq^2 + \sqrt{p^2 + q^2} \} \right]} \text{ V. T. 394, N. 1.}$$

$$19) \int \cos(q \ell x) \cdot x^{p-1} \sqrt{\ell \frac{1}{x}} \cdot dx = \frac{1}{4} \sqrt{\left[\frac{2\pi}{(p^2 + q^2)^2} \{ p^2 - 3pq^2 + \sqrt{p^2 + q^2} \} \right]} \text{ V. T. 394, N. 4.}$$

$$20) \int \ell \sin \left(q \ell \frac{1}{x} \right) \cdot x^{2p-1} dx = \frac{1}{2p} \ell \frac{1}{2} - \frac{p}{2} \sum_1^{\infty} \frac{1}{n} \frac{1}{p^2 + n^2 q^2} \text{ V. T. 467, N. 4.}$$

$$21) \int \ell \cos \left(q \ell \frac{1}{x} \right) \cdot x^{2p-1} dx = -\frac{1}{2p} \ell 2 + \frac{p}{2} \sum_1^{\infty} \frac{(-1)^{n-1}}{n} \frac{1}{p^2 + n^2 q^2} \text{ V. T. 467, N. 5.}$$

$$22) \int \ell \operatorname{Tang} \left(q \ell \frac{1}{x} \right) \cdot x^{2p-1} dx = -p \sum_1^{\infty} \frac{1}{2n-1} \frac{1}{p^2 + (2n-1)^2 q^2} \text{ V. T. 467, N. 6.}$$

- 1) $\int \sin(plx) \frac{dx}{1+x} = \frac{\pi e^{p\pi}}{e^{2p\pi}-1} - \frac{1}{2p}$ V. T. 402, N. 9, 10.
- 2) $\int \sin(plx) \frac{dx}{1-x} = -\frac{\pi}{2} \frac{e^{2p\pi}+1}{e^{2p\pi}-1} + \frac{1}{2p}$ V. T. 264, N. 2.
- 3) $\int \sin(plx) \frac{x^{q-1} dx}{1-x} = -\frac{\pi}{2} + \frac{1}{2p} + \frac{\pi}{1-e^{2p\pi}} + \sum_0^{\infty} \frac{p}{p^2+(n+1)^2}$ V. T. 264, N. 8.
- 4) $\int \sin(plx) \frac{x^{q-1} dx}{1-x} = \phi - \frac{1}{2p} \sin^2 \phi + \sum_1^{\infty} (-1)^n \frac{\sin^{2n} \phi \cdot \sin 2n\phi}{2np^{2n}} B_{2n-1}$ V. T. 264, N. 12.
 Où $\cot \phi = \frac{q-1}{p}$
- 5) $\int \sin(plx) \frac{lx}{1+x^2} dx = \frac{1}{4} \pi^2 \frac{e^{\frac{1}{2}p\pi} - e^{-\frac{1}{2}p\pi}}{(e^{\frac{1}{2}p\pi} + e^{-\frac{1}{2}p\pi})^2}$ V. T. 364, N. 6.
- 6) $\int \cos(plx) \frac{dx}{1+x^2} = \frac{\pi}{2} \frac{e^{\frac{1}{2}p\pi}}{e^{p\pi}+1}$ V. T. 264, N. 14.
- 7) $\int \sin(plx) \frac{x^q - x^{-q}}{1+x^2} dx = \pi \sin \frac{1}{2} q \pi \frac{e^{\frac{1}{2}p\pi} - e^{-\frac{1}{2}p\pi}}{e^{p\pi} + 2 \cos q \pi + e^{-p\pi}} [p^2 < 1, q^2 < 1]$ V. T. 265, N. 2.
- 8) $\int \cos(plx) \frac{x^q + x^{-q}}{1+x^2} dx = \pi \cos \frac{1}{2} q \pi \frac{e^{\frac{1}{2}p\pi} + e^{-\frac{1}{2}p\pi}}{e^{p\pi} + 2 \cos q \pi + e^{-p\pi}} [p^2 < 1, q^2 < 1]$ V. T. 265, N. 3.
- 9) $\int \sin(plx) \frac{dx}{1-x^2} = \frac{\pi}{4} \frac{1-e^{p\pi}}{1+e^{p\pi}}$ V. T. 264, N. 6.
- 10) $\int \sin(plx) \frac{x dx}{1-x^2} = \frac{\pi}{2} \frac{1+e^{p\pi}}{1-e^{p\pi}} + \frac{1}{2p}$ V. T. 264, N. 2.
- 11) $\int \sin(plx) \frac{x^{q-1} dx}{1-x^2} = -\sum_1^{\infty} \frac{p}{(2n+q)^2+p^2}$ V. T. 264, N. 11.
- 12) $\int \sin(plx) \frac{x^q + x^{-q}}{1-x^2} dx = -\frac{\pi}{2} \frac{e^{p\pi} - e^{-p\pi}}{e^{p\pi} + 2 \cos q \pi + e^{-p\pi}} [q^2 \leq 1]$ V. T. 265, N. 4.
- 13) $\int \cos(plx) \frac{lx}{1-x^2} dx = \frac{1}{2} \pi^2 \frac{e^{p\pi}}{(e^{p\pi}+1)^2}$ V. T. 364, N. 7.
- 14) $\int \cos(plx) \frac{x^q - x^{-q}}{1-x^2} dx = \frac{-\pi \sin q \pi}{e^{p\pi} + 2 \cos q \pi + e^{-p\pi}}$ V. T. 265, N. 7.
- 15) $\int \sin^2(plx) \frac{dx}{1+x^2} = \frac{\pi}{8} \frac{(e^{p\pi}-1)^2}{e^{2p\pi}+1}$ V. T. 264, N. 17.
- 16) $\int \cos^2(plx) \frac{dx}{1+x^2} = \frac{\pi}{8} \frac{(e^{p\pi}+1)^2}{e^{2p\pi}+1}$ V. T. 264, N. 18.

F. Alg. rat. fract. à dén. binôme;

Logarithmique;

TABLE 402, suite.

Lim. 0 et 1.

Circul. Directe de Log.

$$17) \int \sin(plx) \frac{x^{q-1}}{1-x^q} dx = \frac{\pi}{2q} \frac{1+e^{\frac{2p\pi}{q}}}{1-e^{\frac{2p\pi}{q}}} + \frac{1}{2p} \text{ V. T. 264, N. 2.}$$

$$18) \int \sin(plx) \frac{x^{q-1}}{1+x^q} dx = \frac{\pi}{q} \frac{1}{e^{\frac{p\pi}{q}} - e^{-\frac{p\pi}{q}}} - \frac{1}{2p} \text{ V. T. 264, N. 1.}$$

$$19) \int \sin(plx) \frac{x^r + x^{-r}}{1-x^q} x^{q-1} dx = \frac{p}{p^2 + r^2} - \frac{\pi}{q} \frac{e^{\frac{2p\pi}{q}} - e^{-\frac{2p\pi}{q}}}{e^{\frac{p\pi}{q}} - 2 \cos \frac{2r\pi}{q} + e^{-\frac{p\pi}{q}}} [r < q] \text{ V. T. 265, N. 5.}$$

$$20) \int \cos(plx) \frac{x^r - x^{-r}}{1-x^q} x^{q-1} dx = \frac{p}{p^2 + r^2} - \frac{\pi}{q} \frac{\sin \frac{2r\pi}{q}}{e^{\frac{2p\pi}{q}} - 2 \cos \frac{2r\pi}{q} + e^{-\frac{2p\pi}{q}}} [r < q] \text{ V. T. 265, N. 8.}$$

F. Alg. rat. fract. à dén. $x(q^p + x^p)$;

Logarithmique;

TABLE 403.

Lim. 0 et 1.

Circ. Directe de Log.

$$1) \int \sin(plx) \frac{1-x^q}{1+x^q} \frac{dx}{x} = \frac{1}{q} \frac{-2\pi}{e^{\frac{p\pi}{q}} - e^{-\frac{p\pi}{q}}} \text{ V. T. 265, N. 1.}$$

$$2) \int \sin(plx) \frac{1+x^q}{1-x^q} \frac{dx}{x} = \frac{\pi}{q} \frac{1+e^{\frac{2p\pi}{q}}}{1-e^{\frac{2p\pi}{q}}} \text{ V. T. 265, N. 3.}$$

$$3) \int \cos(plx) \frac{1-x^q}{1+x^q} \frac{dx}{x} = \frac{2}{q} \pi^2 e^{-\frac{p\pi}{q}} \frac{1+e^{-\frac{2p\pi}{q}}}{\left(1-e^{-\frac{2p\pi}{q}}\right)^2} \text{ V. T. 364, N. 4.}$$

$$4) \int \cos(plx) \frac{1+x^q}{1-x^q} \frac{dx}{x} = \frac{2}{q} \pi^2 e^{-\frac{p\pi}{q}} \frac{1}{\left(1-e^{-\frac{2p\pi}{q}}\right)^2} \text{ V. T. 364, N. 3.}$$

$$5) \int \frac{\sin(plx)}{x^q - x^{-q}} \frac{dx}{x} = \frac{\pi}{4q} \frac{e^{\frac{p\pi}{q}} - 1}{e^{\frac{p\pi}{q}} + 1} [p < q] \text{ V. T. 264, N. 6.}$$

$$6) \int \frac{\cos(plx)}{x^q + x^{-q}} \frac{dx}{x} = \frac{\pi}{2q} \frac{1}{e^{\frac{p\pi}{2q}} + e^{-\frac{p\pi}{2q}}} [p < q] \text{ V. T. 264, N. 14.}$$

F. Alg. rat. fract. à dén. $x(q^p + x^p)$;

Logarithmique;

TABLE 403, suite.

Lim. 0 et 1.

Circ. Directe de Log.

$$7) \int \frac{x^p - x^{-p}}{x^q + x^{-q}} \sin(rlx) \frac{dx}{x} = \frac{\pi}{q} \frac{e^{\frac{r\pi}{2q}} - e^{-\frac{r\pi}{2q}}}{e^{\frac{r\pi}{q}} + 2 \cos \frac{p\pi}{q} + e^{-\frac{r\pi}{q}}} \sin \frac{p\pi}{2q} [p < 2q] \text{ V. T. 265, N. 2.}$$

$$8) \int \frac{x^p + x^{-p}}{x^q - x^{-q}} \sin(rlx) \frac{dx}{x} = \frac{\pi}{2q} \frac{e^{\frac{r\pi}{2q}} - e^{-\frac{r\pi}{2q}}}{e^{\frac{r\pi}{q}} + 2 \cos \frac{p\pi}{q} + e^{-\frac{r\pi}{q}}} [p < q] \text{ V. T. 265, N. 4.}$$

$$9) \int \frac{x^p + x^{-p}}{x^q + x^{-q}} \cos(rlx) \frac{dx}{x} = \frac{\pi}{q} \frac{e^{\frac{r\pi}{2q}} + e^{-\frac{r\pi}{2q}}}{e^{\frac{r\pi}{q}} + 2 \cos \frac{p\pi}{q} + e^{-\frac{r\pi}{q}}} \cos \frac{p\pi}{2q} [p < 2q] \text{ V. T. 265, N. 6.}$$

$$10) \int \frac{x^p - x^{-p}}{x^q - x^{-q}} \cos(rlx) \frac{dx}{x} = \frac{\pi}{q} \frac{\sin \frac{p\pi}{2}}{e^{\frac{r\pi}{q}} + 2 \cos \frac{p\pi}{q} + e^{-\frac{r\pi}{q}}} [p < q] \text{ V. T. 265, N. 7.}$$

$$11) \int \frac{\sin^2(plx)}{x^q + x^{-q}} \frac{dx}{x} = \frac{\pi}{8q} \frac{\left(\frac{e^{\frac{p\pi}{q}} - 1}{e^{\frac{2p\pi}{q}} + 1}\right)^2}{e^{\frac{2p\pi}{q}} + 1} \text{ V. T. 264, N. 17.}$$

$$12) \int \frac{\cos^2(plx)}{x^q + x^{-q}} \frac{dx}{x} = \frac{\pi}{8q} \frac{\left(\frac{e^{\frac{p\pi}{q}} + 1}{e^{\frac{2p\pi}{q}} + 1}\right)^2}{e^{\frac{2p\pi}{q}} + 1} \text{ V. T. 264, N. 18.}$$

F. Alg. rat. fract. à autre dén.;

Logarithmique;

TABLE 404.

Lim. 0 et 1.

Circ. Directe de Log.

$$1) \int \cos(plx) \cdot l(1+x) \frac{dx}{x} = \frac{1}{2p^2} - \frac{\pi}{p} \frac{e^{p\pi}}{e^{2p\pi} - 1} \text{ V. T. 402, N. 1.}$$

$$2) \int \cos(plx) \cdot l(1-x) \frac{dx}{x} = \frac{1}{2p^2} - \frac{\pi}{2p} \frac{e^{2p\pi} + 1}{e^{2p\pi} - 1} \text{ V. T. 402, N. 2.}$$

$$3) \int \cos(plx) \cdot l(1-x^2) \frac{dx}{x} = \frac{1}{p^2} + \frac{\pi}{p} \frac{1 + e^{p\pi}}{1 - e^{p\pi}} \text{ V. T. 402, N. 9.}$$

$$4) \int \cos(plx) \frac{x^{q-1}}{(1+x^q)^2} dx = \frac{p}{q^2} \frac{\pi}{e^{\frac{p\pi}{q}} - e^{-\frac{p\pi}{q}}} \text{ (IV, 522).}$$

F. Alg. rat. fract. à autre dén.;

Logarithmique;

TABLE 404, suite.

Lim. 0 et 1.

Circ. Directe de Log.

$$5) \int \sin(plx) \frac{dx}{(1-x^2)x^{q+1}} = -\sum_1 \frac{p}{(2x-q)^2+p^2} \text{ V. T. 264, N. 10.}$$

$$6) \int \cos(plx) \frac{dx}{1+2x \cos \lambda + x^2} = \frac{\pi}{2} \operatorname{Cosec} \lambda \frac{e^{p\lambda} - e^{-p\lambda}}{e^{p\pi} - e^{-p\pi}} [\lambda \leq \pi] \text{ V. T. 267, N. 3.}$$

$$7) \int \sin(qlx) \frac{x^{2p}-1}{1+2x^{2p} \cos(2qlx) + x^{4p}} x^{p-1} dx = \frac{\pi}{4} \frac{q}{p^2+q^2} \text{ V. T. 267, N. 7.}$$

$$8) \int \cos(qlx) \frac{x^{2p}+1}{1+2x^{2p} \cos(2qlx) + x^{4p}} x^{p-1} dx = \frac{\pi}{4} \frac{p}{p^2+q^2} \text{ V. T. 267, N. 8.}$$

$$9) \int \cos(qlx) \frac{1}{x^p + 2 \cos \lambda + x^{-p}} \frac{dx}{x} = \frac{\pi}{2p} \operatorname{Cosec} \lambda \frac{e^{\frac{q\lambda}{p}} - e^{-\frac{q\lambda}{p}}}{e^{\frac{q\pi}{p}} - e^{-\frac{q\pi}{p}}} [\lambda < \pi] \text{ V. T. 404, N. 6.}$$

$$10) \int \sin(plx) \frac{1-x^2}{1+2x \cos \lambda + x^2} \frac{dx}{x} = -\pi \frac{e^{p\lambda} + e^{-p\lambda}}{e^{p\pi} - e^{-p\pi}} \text{ V. T. 267, N. 1.}$$

$$11) \int \cos(plx) \frac{1+x^2}{1+2x \cos \lambda + x^2} \frac{dx}{x} = -\pi \cot \lambda \frac{e^{p\lambda} - e^{-p\lambda}}{e^{p\pi} - e^{-p\pi}} \text{ V. T. 267, N. 5.}$$

$$12) \int \frac{\cos(qlx)}{x^p + \left(a + \frac{1}{a}\right) + x^{-p}} \frac{dx}{x} = \frac{\lambda}{p} \cdot \frac{a\pi}{1-a^2} \frac{\sin\left(\frac{q}{p} \lambda a\right)}{\frac{e^{\frac{q\pi}{p}} - e^{-\frac{q\pi}{p}}}{e^{\frac{q\pi}{p}} - e^{-\frac{q\pi}{p}}}} \text{ (IV, 523).}$$

$$13) \int \cos(plx) \frac{dx}{(1+x)\sqrt{x}} = \frac{\pi}{e^{p\pi} + e^{-p\pi}} \text{ V. T. 264, N. 14.}$$

F. Alg. rat.;

Log. en dén. $(lx)^a$;

TABLE 405.

Lim. 0 et 1.

Circ. Directe.

$$1) \int \sin(plx) \cdot x^a \frac{dx}{lx} = \operatorname{Arctg} \left(\frac{p}{a+1} \right) \text{ V. T. 365, N. 1.}$$

$$2) \int \sin \left(q \sqrt{l \frac{1}{x}} \right) \cdot x^{p-1} \frac{dx}{lx} = q \sqrt{\frac{\pi}{p}} \cdot \sum_0^{\infty} \frac{(-1)^{n-1}}{(2n+1)1^{n/1}} \left(\frac{q^2}{4p} \right)^n \text{ V. T. 365, N. 21.}$$

$$3) \int \sin(lx) \frac{1+x}{lx} x dx = \frac{1}{4} \pi \text{ (IV, 523).}$$

$$4) \int \{x^{p-1} \sin(rx) - x^{q-1} \sin(sx)\} \frac{dx}{lx} = \operatorname{Arctg} \left(\frac{qr - ps}{pq + rs} \right) \text{ V. T. 367, N. 11.}$$

$$5) \int \cos(qlx) \cdot x^{p-1} \frac{dx}{lx} = \infty \text{ V. T. 365, N. 3.}$$

$$6) \int \{x^{p-1} \cos(rx) - x^{q-1} \cos(sx)\} \frac{dx}{lx} = \frac{1}{2} l \frac{p^2 + r^2}{q^2 + s^2} \text{ V. T. 367, N. 12.}$$

$$7) \int \sin^2(qlx) \cdot x^{p-1} \frac{dx}{lx} = \frac{1}{4} l \frac{p^2}{p^2 + 4q^2} \text{ V. T. 365, N. 4.}$$

$$8) \int \sin rx \cdot (x^{p-1} - x^{q-1}) \frac{dx}{lx} = \sum_1^{\infty} \frac{(-1)^n}{1^{1/n+1}} r^{2n+1} l \frac{p+2n+1}{q+2n+1} \text{ (VIII, 492).}$$

$$9) \int \cos rx \cdot (x^{p-1} - x^{q-1}) \frac{dx}{lx} = l \frac{p}{q} + \sum_1^{\infty} \frac{(-1)^n}{1^{1/n+1}} r^{2n} l \frac{p+2n}{q+2n} \text{ (VIII, 492).}$$

$$10) \int \sin^2(qlx) \cdot x^{p-1} \frac{dx}{(lx)^2} = q \operatorname{Arctg} \frac{2q}{p} - \frac{p}{4} l \frac{p^2 + 4q^2}{p^3} \text{ V. T. 368, N. 2.}$$

$$11) \int \{x^{p-1} \sin(rx) - x^{q-1} \sin(sx)\} \frac{dx}{(lx)^{a+1}} = (-1)^{a-1} \frac{\Gamma(1-a)}{a} \left\{ (q^2 + s^2)^{\frac{1}{2}a} \sin\left(a \operatorname{Arctg} \frac{s}{q}\right) - (p^2 + r^2)^{\frac{1}{2}a} \sin\left(a \operatorname{Arctg} \frac{r}{p}\right) \right\} \text{ V. T. 371, N. 6.}$$

$$12) \int \{x^{p-1} \cos(rx) - x^{q-1} \cos(sx)\} \frac{dx}{(lx)^{a+1}} = (-1)^{a-1} \frac{\Gamma(1-a)}{a} \left\{ (q^2 + s^2)^{\frac{1}{2}a} \cos\left(a \operatorname{Arctg} \frac{s}{q}\right) - (p^2 + r^2)^{\frac{1}{2}a} \cos\left(a \operatorname{Arctg} \frac{r}{p}\right) \right\} \text{ V. T. 371, N. 7.}$$

$$13) \int \frac{\sin(2plx)}{lx} \frac{dx}{1+x^2} = \operatorname{Arctg}(e^{px}) \text{ V. T. 387, N. 1.}$$

$$14) \int \frac{\cos(2plx)}{lx} \frac{dx}{1-x^2} = -\frac{1}{2} l (e^{px} + e^{-px}) \text{ V. T. 387, N. 2.}$$

$$15) \int \frac{\cos(2plx)}{x lx} \frac{x^q - x^{-q}}{x^q + x^{-q}} dx = l \frac{1 - e^{-\frac{px}{q}}}{1 + e^{-\frac{px}{q}}} \text{ V. T. 387, N. 8.}$$

$$16) \int \frac{\cos(2plx)}{x lx} \frac{x^q + x^{-q}}{x^q - x^{-q}} dx = -l (e^{\frac{px}{q}} - e^{-\frac{px}{q}}) \text{ V. T. 387, N. 9.}$$

F. Alg. rat.;

Log. en dén. $\sqrt{-lx}$;

Circul. Dir. de Log.

TABLE 406.

Lim. 0 et 1.

$$1) \int \sin(plx) \cdot x^{q-1} \frac{dx}{\sqrt{l\frac{1}{x}}} = -\sqrt{\left\{\frac{\pi}{2} \frac{\sqrt{p^2+q^2}-q}{p^2+q^2}\right\}} \text{ V. T. 395, N. 1.}$$

$$2) \int \cos(plx) \cdot x^{q-1} \frac{dx}{\sqrt{l\frac{1}{x}}} = \sqrt{\left\{\frac{\pi}{2} \frac{q+\sqrt{p^2+q^2}}{p^2+q^2}\right\}} \text{ V. T. 395, N. 2.}$$

$$3) \int \sin\left(\frac{2p^2}{lx}\right) \cdot x^{q-1} \frac{dx}{\sqrt{l\frac{1}{x}}} = -e^{-2p\sqrt{q}} \sin(2p\sqrt{q}) \cdot \sqrt{\frac{\pi}{q}} \text{ V. T. 263, N. 12.}$$

$$4) \int \cos\left(\frac{2p^2}{lx}\right) \cdot x^{q-1} \frac{dx}{\sqrt{l\frac{1}{x}}} = e^{-2p\sqrt{q}} \cos(2p\sqrt{q}) \cdot \sqrt{\frac{\pi}{q}} \text{ V. T. 263, N. 13.}$$

$$5) \int \sin\left(p\sqrt{l\frac{1}{x}}\right) \cdot x^{q-1} \frac{dx}{\sqrt{l\frac{1}{x}}} = \frac{2}{p} \sum_{n=0}^{\infty} \frac{(-1)^n}{(n+2)^{n+1/2}} \left(\frac{p^2}{q}\right)^{n+1} \text{ V. T. 263, N. 1.}$$

$$6) \int \cos\left(p\sqrt{l\frac{1}{x}}\right) \cdot x^{q-1} \frac{dx}{\sqrt{l\frac{1}{x}}} = e^{-\frac{p^2}{2q}} \sqrt{\frac{\pi}{q}} \text{ V. T. 263, N. 2.}$$

$$7) \int \cot\left(p\sqrt{l\frac{1}{x}}\right) \cdot x^{q-1} \frac{dx}{\sqrt{l\frac{1}{x}}} = 2 \sqrt{\frac{\pi}{q}} \cdot \sum_{n=1}^{\infty} e^{-n^2 \frac{p^2}{q}} \text{ V. T. 263, N. 7.}$$

F. Alg. rat. fract.;

Log. en dén. $q^2 \pm (lx)^2$;

Circul. Dir. de Log.

TABLE 407.

Lim. 0 et 1.

$$1) \int \frac{\sin(2plx)}{\frac{1}{4}\pi^2 + (lx)^2} \frac{dx}{1-x^2} = -\frac{e^{p\pi} + e^{-p\pi}}{\pi} \operatorname{Arctg}(e^{-p\pi}) + \frac{1}{2} e^{-p\pi} \text{ V. T. 389, N. 2.}$$

$$2) \int \frac{\sin(plx)}{\pi^2 + (lx)^2} \frac{dx}{1-x^2} = \frac{1}{4} p e^{p\pi} - \frac{e^{p\pi} - e^{-p\pi}}{4\pi} l(1+e^{-p\pi}) \text{ V. T. 389, N. 4.}$$

$$3) \int \frac{\sin(plx)}{\pi^2 + (lx)^2} \frac{1+x^2}{1-x^2} dx = -\frac{p}{2} e^{-p\pi} + \frac{e^{p\pi} - e^{-p\pi}}{2\pi} l(1-e^{-p\pi}) \text{ V. T. 389, N. 5.}$$

$$4) \int \frac{\sin(plx)}{\pi^2 + (lx)^2} \frac{x^q + x^{-q}}{1-x^2} dx = \frac{1}{2} e^{-p\pi} (p \cos q\pi + q \sin q\pi) - \frac{e^{p\pi} - e^{-p\pi}}{4\pi} \cos q\pi.$$

$$l(1 + 2e^{-p\pi} \cos q\pi + e^{-2p\pi}) - \frac{e^{p\pi} + e^{-p\pi}}{2\pi} \sin q\pi \cdot \operatorname{Arctg}\left(\frac{\sin q\pi}{e^{p\pi} + \cos q\pi}\right) [q^2 \leq 1] \\ \text{V. T. 389, N. 9.}$$

$$5) \int \frac{\sin(plx)}{\pi^2 + (lx)^2} \frac{x^q - x^{-q}}{1 - x^2} lx \cdot dx = -\frac{\pi}{2} e^{-p\pi} (p \sin q\pi - q \cos q\pi) + \frac{e^{p\pi} - e^{-p\pi}}{4} \sin q\pi.$$

$$l(1 + 2e^{-p\pi} \cos q\pi + e^{-2p\pi}) - \frac{e^{p\pi} + e^{-p\pi}}{2} \cos q\pi \cdot \operatorname{Arctg} \left(\frac{\sin q\pi}{e^{p\pi} + \cos q\pi} \right) [q^2 < 1]$$

V. T. 389, N. 10.

$$6) \int \frac{\sin(plx)}{r^2 + (lx)^2} \frac{x^q + x^{-q}}{1 - x^2} dx = -\frac{\pi}{2r^2} + \frac{\pi e^{-pr} \cos qr}{2r \sin r} + \pi \sum_1^{\infty} (-1)^n \frac{e^{-npr} \cos nq\pi}{n^2 \pi^2 - r^2} [0 \leq q \leq 1]$$

V. T. 389, N. 21.

$$7) \int \frac{\sin(plx)}{r^2 + (lx)^2} \frac{x^q - x^{-q}}{1 - x^2} lx \cdot dx = -\frac{\pi e^{-pr} \sin qr}{r \sin r} + \pi^2 \sum_1^{\infty} (-1)^{n-1} \frac{n e^{-npr} \sin nq\pi}{n^2 \pi^2 - r^2}$$

V. T. 389, N. 23.

$$8) \int \frac{\cos(plx)}{\pi^2 + (lx)^2} \frac{lx}{1 - x^2} dx = \frac{1}{4} - \frac{1}{4} p\pi e^{-p\pi} - \frac{e^{p\pi} + e^{-p\pi}}{4} l(1 + e^{-p\pi}) \quad \text{V. T. 389, N. 14.}$$

$$9) \int \frac{\cos(plx)}{\pi^2 + (lx)^2} \frac{x^q - x^{-q}}{1 - x^2} dx = \frac{1}{2} e^{-p\pi} (q \cos q\pi - p \sin q\pi) - \frac{e^{p\pi} + e^{-p\pi}}{4\pi} \sin q\pi.$$

$$l(1 + 2e^{-p\pi} \cos q\pi + e^{-2p\pi}) + \frac{e^{p\pi} - e^{-p\pi}}{2\pi} \cos q\pi \cdot \operatorname{Arctg} \left(\frac{\sin q\pi}{e^{p\pi} + \cos q\pi} \right) [q^2 < 1]$$

V. T. 389, N. 20.

$$10) \int \frac{\cos(plx)}{\pi^2 + (lx)^2} \frac{x^q + x^{-q}}{1 - x^2} lx \cdot dx = \frac{1}{2} - \frac{\pi}{2} e^{-p\pi} (p \cos q\pi + q \sin q\pi) - \frac{e^{p\pi} + e^{-p\pi}}{4} \cos q\pi.$$

$$l(1 + 2e^{-p\pi} \cos q\pi + e^{-2p\pi}) - \frac{e^{p\pi} - e^{-p\pi}}{2} \sin p\pi \cdot \operatorname{Arctg} \left(\frac{\sin q\pi}{e^{p\pi} + \cos q\pi} \right) [q^2 \leq 1]$$

V. T. 389, N. 19.

$$11) \int \frac{\cos(plx)}{r^2 + (lx)^2} \frac{x^q - x^{-q}}{1 - x^2} dx = -\frac{\pi e^{-pr} \sin qr}{2r \sin r} - \pi \sum_1^{\infty} (-1)^n \frac{e^{-npr} \sin nq\pi}{n^2 \pi^2 - r^2} [0 < q < 1]$$

V. T. 389, N. 22.

$$12) \int \frac{\cos(plx)}{r^2 + (lx)^2} \frac{x^q + x^{-q}}{1 - x^2} lx \cdot dx = -\frac{\pi e^{-pr} \cos qr}{2 \sin r} + \pi^2 \sum_1^{\infty} (-1)^{n-1} \frac{n e^{-npr} \cos nq\pi}{n^2 \pi^2 - r^2}$$

V. T. 389, N. 24.

$$13) \int \frac{\sin(2plx)}{\frac{1}{4}\pi^2 + (lx)^2} \frac{1-x}{1+x} \frac{dx}{x} = e^{p\pi} + \frac{e^{p\pi} - e^{-p\pi}}{\pi} l \frac{e^{p\pi} - 1}{e^{p\pi} + 1} - 2 \frac{e^{p\pi} + e^{-p\pi}}{\pi} \operatorname{Arctg}(e^{p\pi})$$

V. T. 388, N. 4.

$$14) \int \frac{\sin(2plx)}{\frac{1}{4}\pi^2 + (lx)^2} \frac{1+x}{1-x} \frac{dx}{x} = e^{-p\pi} + \frac{e^{p\pi} - e^{-p\pi}}{\pi} l \frac{e^{p\pi} - 1}{e^{p\pi} + 1} - 2 \frac{e^{p\pi} + e^{-p\pi}}{\pi} \operatorname{Arctg}(e^{-p\pi})$$

V. T. 389, N. 3.

F. Alg. rat. fract.;

Log. en dén. $q^2 \pm (lx)^2$;

TABLE 407, suite.

Lim. 0 et 1.

Circul. Dir. de Log.

$$15) \int \frac{\sin(plx)}{\pi^2 + (lx)^2} \frac{1-x}{1+x} \frac{dx}{x} = \frac{e^{p\pi} - e^{-p\pi}}{2\pi} l(1 - e^{-2p\pi}) - p e^{-p\pi} \text{ V. T. 388, N. 3.}$$

$$16) \int \frac{\sin(plx)}{\pi^2 + (lx)^2} \frac{1+x}{1-x} \frac{dx}{x} = \frac{e^{p\pi} - e^{-p\pi}}{2\pi} l \frac{e^{p\pi} - 1}{e^{p\pi} + 1} \text{ V. T. 389, N. 6.}$$

$$17) \int \frac{\cos(2plx)}{\frac{1}{4}\pi^2 + (lx)^2} \frac{1-x}{1+x} \frac{lx}{x} dx = \frac{\pi}{2} e^{-p\pi} + \frac{e^{p\pi} + e^{-p\pi}}{2} l \frac{e^{p\pi} - 1}{e^{p\pi} + 1} - (e^{p\pi} - e^{-p\pi}) \operatorname{Arctg}(e^{p\pi})$$

V. T. 388, N. 8.

$$18) \int \frac{\cos(2plx)}{\frac{1}{4}\pi^2 + (lx)^2} \frac{1+x}{1-x} \frac{lx}{x} dx = 2 - \frac{\pi}{2} e^{-p\pi} + \frac{e^{p\pi} + e^{-p\pi}}{2} l \frac{e^{p\pi} - 1}{e^{p\pi} + 1} - (e^{p\pi} - e^{-p\pi}) \operatorname{Arctg}(e^{-p\pi})$$

V. T. 389, N. 13.

$$19) \int \frac{\cos(plx)}{\pi^2 + (lx)^2} \frac{1+x^2}{1-x^2} \frac{lx}{x} dx = \frac{1}{2} + \frac{\pi}{2} p e^{-p\pi} + \frac{e^{p\pi} + e^{-p\pi}}{2} l(1 - e^{-p\pi}) \text{ V. T. 389, N. 15.}$$

$$20) \int \frac{\cos(plx)}{\pi^2 + (lx)^2} \frac{1+x}{1-x} \frac{lx}{x} dx = 1 + \frac{e^{p\pi} + e^{-p\pi}}{2} l \frac{e^{p\pi} - 1}{e^{p\pi} + 1} \text{ V. T. 389, N. 16.}$$

$$21) \int \frac{\sin(lx)}{x^2 + 2 \cos(lx) + x^{-2}} \frac{lx}{\pi^2 - (lx)^2} \frac{dx}{x} = \frac{1}{2q} - \frac{1}{2} \operatorname{Arccot} q \text{ V. T. 390, N. 1.}$$

$$22) \int \frac{\sin(lx)}{x^2 - 2 \cos(lx) + x^{-2}} \frac{lx}{\pi^2 - (lx)^2} \frac{dx}{x} = \frac{1}{2} \operatorname{Arccot} q - \frac{1}{2} \frac{q}{1+q^2} \text{ V. T. 390, N. 2.}$$

$$23) \int \frac{\cos(plx)}{\pi^2 + (lx)^2} \frac{1+x^2}{1-x^2} \frac{dx}{x lx} = \frac{-1}{2\pi^2} \frac{1-p\pi + p\pi e^{-p\pi}}{1-e^{-p\pi}} - \frac{(e^{\frac{1}{2}p\pi} - e^{-\frac{1}{2}p\pi})^2}{2\pi^2} l(1 - e^{-p\pi})$$

V. T. 390, N. 5.

$$24) \int \frac{\sin(lx)}{x^{2q} - 2 \cos(2lx) + x^{-2q}} \frac{x^q + x^{-q}}{\pi^2 - (lx)^2} lx \frac{dx}{x} = \frac{1}{2q} \frac{1}{1+q^2} \text{ V. T. 390, N. 3.}$$

$$25) \int \frac{\sin(2lx)}{x^{2q} - 2 \cos(2lx) + x^{-2q}} \frac{lx}{\pi^2 - (lx)^2} \frac{dx}{x} = \frac{1}{4q} \frac{1+2q^2}{1+q^2} - \frac{1}{2} \operatorname{Arctg} \frac{1}{q} \text{ V. T. 390, N. 4.}$$

F. Alg. irrat. fract.;

Log. en dén. $q^2 \pm (lx)^2$;

TABLE 408.

Lim. 0 et 1.

Circul. Dir. de Log.

$$1) \int \frac{\sin(2plx)}{\frac{1}{4}\pi^2 + (lx)^2} \frac{lx}{1+x} \frac{dx}{\sqrt{x}} = \frac{\pi}{2\sqrt{2}} e^{-p\pi} + \frac{e^{p\pi} - e^{-p\pi}}{4\sqrt{2}} l \frac{e^{p\pi} + \sqrt{2} + e^{-p\pi}}{e^{p\pi} - \sqrt{2} + e^{-p\pi}} - \frac{e^{p\pi} + e^{-p\pi}}{2\sqrt{2}} \operatorname{Arctg} \left(\frac{\sqrt{2}}{e^{p\pi} - e^{-p\pi}} \right) \text{ V. T. 388, N. 1.}$$

F. Alg. irrat. fract.;

Log. en dén. $q^2 \pm (lx)^2$;

Circul. Dir. de Log.

TABLE 408, suite.

Lim. 0 et 1.

$$2) \int \frac{\sin(plx)}{\pi^2 + (lx)^2} \frac{lx}{1+x} \frac{dx}{\sqrt{x}} = \frac{1}{2} p \pi e^{-p\pi} - \frac{e^{p\pi} - e^{-p\pi}}{4} l(1 + e^{-2p\pi}) \text{ V. T. 388, N. 2.}$$

$$3) \int \frac{\sin(2plx)}{\frac{1}{4}\pi^2 + (lx)^2} \frac{1}{1-x} \frac{dx}{\sqrt{x}} = \frac{e^{-p\pi}}{\pi\sqrt{2}} + \frac{e^{p\pi} - e^{-p\pi}}{2\pi\sqrt{2}} l \frac{e^{p\pi} - \sqrt{2} + e^{-p\pi}}{e^{p\pi} + \sqrt{2} + e^{-p\pi}} - \frac{e^{p\pi} + e^{-p\pi}}{\pi\sqrt{2}} \text{ Arctg} \left(\frac{\sqrt{2}}{e^{p\pi} - e^{-p\pi}} \right) \text{ V. T. 389, N. 1.}$$

$$4) \int \frac{\sin(plx)}{\pi^2 + (lx)^2} \frac{1}{1-x} \frac{dx}{\sqrt{x}} = \frac{1}{4} e^{-p\pi} - \frac{e^{p\pi} + e^{-p\pi}}{2\pi} \text{ Arctg}(e^{-p\pi}) \text{ V. T. 389, N. 2.}$$

$$5) \int \frac{\sin(plx)}{\pi^2 + (lx)^2} \frac{x^2 + x^{-2}}{1-x} \frac{dx}{\sqrt{x}} = \frac{1}{2} e^{-p\pi} \cos q\pi + \frac{e^{p\pi} - e^{-p\pi}}{4\pi} \sin q\pi \cdot l \frac{e^{p\pi} - 2 \sin q\pi + e^{-p\pi}}{e^{p\pi} + 2 \sin q\pi + e^{-p\pi}} - \frac{e^{p\pi} + e^{-p\pi}}{2\pi} \cos q\pi \cdot \text{Arctg} \left(\frac{2 \cos q\pi}{e^{p\pi} - e^{-p\pi}} \right) \left[q^2 \leq \frac{1}{4} \right] \text{ V. T. 389, N. 7.}$$

$$6) \int \frac{\sin(plx)}{\pi^2 + (lx)^2} \frac{x^2 - x^{-2}}{1-x} \frac{dx}{\sqrt{x}} = -\frac{1}{2} e^{-p\pi} \sin q\pi + \frac{e^{p\pi} - e^{-p\pi}}{4\pi} \cos q\pi \cdot l \frac{1 - 2 e^{-p\pi} \sin q\pi + e^{-2p\pi}}{1 + 2 e^{-p\pi} \sin q\pi + e^{-2p\pi}} + \frac{e^{p\pi} + e^{-p\pi}}{2\pi} \sin q\pi \cdot \text{Arctg} \left(\frac{2 \cos q\pi}{e^{p\pi} - e^{-p\pi}} \right) \left[q^2 < \frac{1}{4} \right] \text{ V. T. 389, N. 8.}$$

$$7) \int \frac{\cos(2plx)}{\frac{1}{4}\pi^2 + (lx)^2} \frac{1}{1+x} \frac{dx}{\sqrt{x}} = \frac{1}{2} e^{-p\pi} \sqrt{2} - \frac{e^{p\pi} + e^{-p\pi}}{2\pi\sqrt{2}} l \frac{1 + e^{-p\pi} \sqrt{2} + e^{-2p\pi}}{1 - e^{-p\pi} \sqrt{2} + e^{-2p\pi}} + \frac{e^{p\pi} - e^{-p\pi}}{\pi\sqrt{2}} \text{ Arctg} \left(\frac{\sqrt{2}}{e^{p\pi} - e^{-p\pi}} \right) \text{ V. T. 388, N. 5.}$$

$$8) \int \frac{\cos(plx)}{\pi^2 + (lx)^2} \frac{1}{1+x} \frac{dx}{\sqrt{x}} = \frac{1}{2} p e^{-p\pi} + \frac{e^{p\pi} + e^{-p\pi}}{4\pi} l(1 + e^{-2p\pi}) \text{ V. T. 388, N. 6.}$$

$$9) \int \frac{\cos(plx)}{\pi^2 + (lx)^2} \frac{1 + \sqrt{x}}{1 - \sqrt{x}} \frac{lx}{\sqrt{x}} dx = 2 - \frac{\pi}{2} e^{-p\pi} + \frac{e^{p\pi} + e^{-p\pi}}{2} l \frac{1 - e^{-p\pi}}{1 + e^{-p\pi}} - (e^{p\pi} - e^{-p\pi}) \text{ Arctg}(e^{-p\pi}) \text{ V. T. 389, N. 13.}$$

$$10) \int \frac{\cos(plx)}{\pi^2 + (lx)^2} \frac{lx}{1-x} \frac{dx}{\sqrt{x}} = \frac{1}{2} - \frac{e^{p\pi} - e^{-p\pi}}{2} \text{ Arctg}(e^{-p\pi}) - \frac{\pi}{4} e^{-p\pi} \text{ V. T. 389, N. 11.}$$

$$11) \int \frac{\cos(plx)}{\pi^2 + (lx)^2} \frac{1 - \sqrt{x}}{1 + \sqrt{x}} \frac{lx}{\sqrt{x}} dx = \frac{\pi}{2} e^{p\pi} + \frac{e^{p\pi} + e^{-p\pi}}{2} l \frac{1 - e^{-p\pi}}{1 + e^{-p\pi}} - (e^{p\pi} - e^{-p\pi}) \text{ Arctg}(e^{p\pi}) \text{ V. T. 388, N. 8.}$$

$$12) \int \frac{\cos(plx)}{\pi^2 + (lx)^2} \frac{x^2 - x^{-2}}{1-x} \frac{dx}{\sqrt{x}} = -e^{-p\pi} \sin q\pi + \frac{e^{p\pi} + e^{-p\pi}}{2\pi} \cos q\pi \cdot l \frac{e^{p\pi} + 2 \sin q\pi + e^{-p\pi}}{e^{p\pi} - 2 \sin q\pi + e^{-p\pi}} - \frac{e^{p\pi} - e^{-p\pi}}{\pi} \sin q\pi \cdot \text{Arctg} \left(\frac{2 \cos q\pi}{e^{p\pi} - e^{-p\pi}} \right) \left[q^2 < \frac{1}{4} \right] \text{ V. T. 389, N. 18.}$$

F. Alg. irrat. fract.;

Log. en dén. $q^2 \pm (lx)^2$; TABLE 408, suite.

Lim. 0 et 1.

Circul. Dir. de Log.

$$13) \int \frac{\cos(plx)}{\pi^2 + (lx)^2} \frac{x^2 + x^{-2}}{1-x} \frac{lx}{\sqrt{x}} dx = 1 - \frac{\pi}{2} e^{-p\pi} \cos q\pi + \frac{e^{p\pi} + e^{-p\pi}}{4} \sin q\pi \cdot l \frac{e^{p\pi} - 2 \sin q\pi + e^{-p\pi}}{e^{p\pi} + 2 \sin q\pi + e^{-p\pi}} - \frac{e^{p\pi} - e^{-p\pi}}{2} \cos q\pi \cdot \operatorname{Arctg} \left(\frac{2 \cos q\pi}{e^{p\pi} - e^{-p\pi}} \right) \left[q^2 \leq \frac{1}{4} \right] \text{ V. T. 389, N. 17.}$$

F. Alg. rat. fract. à dén. x ;

Log. $l(p + \cos x), l(p + \cos^2 x)$; TABLE 409.

Lim. 0 et ∞ .

Circul. Directe rat.

$$1) \int l(1 \pm p \cos 2x) \cdot \sin x \frac{dx}{x} = \frac{\pi}{2} l \frac{1 + \sqrt{1-p^2}}{2} [p^2 < 1] \text{ (VIII, 398).}$$

$$2) \int l(1 \pm p \cos 2x) \cdot \operatorname{Tg} x \frac{dx}{x} = \frac{\pi}{2} l \frac{1 + \sqrt{1-p^2}}{2} [p^2 < 1] \text{ (VIII, 398).}$$

$$3) \int l(1 \pm p \cos 4x) \cdot \operatorname{Tg} x \frac{dx}{x} = \frac{\pi}{2} l \frac{1 + \sqrt{1-p^2}}{2} [p^2 < 1] \text{ (VIII, 398).}$$

$$4) \int l(q \pm \cos 2x) \cdot \sin x \frac{dx}{x} = \frac{\pi}{2} l \frac{q + \sqrt{q^2-1}}{2} [q^2 > 1] \text{ (VIII, 398).}$$

$$5) \int l(q \pm \cos 2x) \cdot \operatorname{Tg} x \frac{dx}{x} = \frac{\pi}{2} l \frac{q + \sqrt{q^2-1}}{2} [q^2 > 1] \text{ (VIII, 398).}$$

$$6) \int l(q \pm \cos 4x) \cdot \operatorname{Tg} x \frac{dx}{x} = \frac{\pi}{2} l \frac{q + \sqrt{q^2-1}}{2} [q^2 > 1] \text{ (VIII, 398).}$$

$$7) \int l(1 \pm p \cos 2x) \frac{\sin x}{\cos 2x} \frac{dx}{x} = \frac{\pi}{2} \operatorname{Arcsin} p [p^2 < 1] \text{ (VIII, 399).}$$

$$8) \int l(1 \pm p \cos 2x) \frac{\operatorname{Tg} x}{\cos 2x} \frac{dx}{x} = \frac{\pi}{2} \operatorname{Arcsin} p [p^2 < 1] \text{ (VIII, 399).}$$

$$9) \int l(1 \pm p \cos 4x) \frac{\operatorname{Tg} x}{\cos 4x} \frac{dx}{x} = \frac{\pi}{2} \operatorname{Arcsin} p [p^2 < 1] \text{ (VIII, 399).}$$

$$10) \int l(1 + p \cos^2 x) \cdot \sin x \frac{dx}{x} = \pi l \frac{1 + \sqrt{1+p}}{2} \text{ (VIII, 397).}$$

$$11) \int l(1 + p \cos^2 x) \cdot \sin x \cdot \cos x \frac{dx}{x} = \frac{\pi}{4} \frac{\sqrt{1+p}-1}{\sqrt{1+p}+1} + \frac{\pi}{2} l \frac{1 + \sqrt{1+p}}{2} \text{ (VIII, 397).}$$

$$12) \int l(1 + p \cos^2 x) \cdot \sin^2 x \frac{dx}{x} = \frac{\pi}{4} \frac{1 - \sqrt{1+p}}{1 + \sqrt{1+p}} + \frac{\pi}{2} l \frac{1 + \sqrt{1+p}}{2} \text{ (VIII, 397).}$$

F. Alg. rat. fract. à dén. x ;

Log. $\int (p + \cos x), \int (p + \cos^2 x)$; TABLE 409, suite.

Lim. 0 et ∞ .

Circul. Directe rat.

$$13) \int \int (1 + p \cos^2 x) \cdot \sin x \cdot \cos^2 x \frac{dx}{x} = \frac{\pi}{4} \frac{\sqrt{1+p}-1}{\sqrt{1+p}+1} + \frac{\pi}{2} \int \frac{1+\sqrt{1+p}}{2} \quad (\text{VIII, 397}).$$

$$14) \int \int (1 + p \cos^2 x) \cdot \sin^2 x \cdot \text{Tg } x \frac{dx}{x} = \frac{\pi}{4} \frac{1-\sqrt{1+p}}{1+\sqrt{1+p}} + \frac{\pi}{2} \int \frac{1+\sqrt{1+p}}{2} \quad (\text{VIII, 397}).$$

$$15) \int \int (1 + p \cos^2 x) \cdot \text{Tg } x \frac{dx}{x} = \pi \int \frac{1+\sqrt{1+p}}{2} \quad (\text{VIII, 397}).$$

$$16) \int \int (1 + p \cos^2 2x) \cdot \sin^2 x \cdot \cos x \frac{dx}{x} = \frac{\pi}{16} \frac{1-\sqrt{1+p}}{1+\sqrt{1+p}} + \frac{\pi}{8} \int \frac{1+\sqrt{1+p}}{2} \quad (\text{VIII, 397}).$$

$$17) \int \int (1 + p \cos^2 2x) \cdot \cos^2 2x \cdot \text{Tg } x \frac{dx}{x} = \frac{\pi}{4} \frac{\sqrt{1+p}-1}{\sqrt{1+p}+1} + \frac{\pi}{2} \int \frac{1+\sqrt{1+p}}{2} \quad (\text{VIII, 397}).$$

$$18) \int \int (1 + p \cos^2 2x) \cdot \text{Tg } x \frac{dx}{x} = \pi \int \frac{1+\sqrt{1+p}}{2} \quad (\text{VIII, 397}).$$

F. Alg. rat. fract. à dén. x ;

Log. $\int (1 + 2p \cos x + p^2)$; TABLE 410.

Lim. 0 et ∞ .

Circul. Directe rat.

$$1) \int \int (1 \pm 2p \cos 2x + p^2) \cdot \sin x \frac{dx}{x} = 0 [p^2 < 1], = \pi \int p [p^2 > 1] \quad (\text{VIII, 398}).$$

$$2) \int \int (1 \pm 2p \cos 2x + p^2) \cdot \sin x \cdot \cos x \frac{dx}{x} = \pm \frac{1}{4} p \pi [p^2 < 1], = \pm \frac{1}{4} p \pi + \frac{\pi}{2} \int p [p^2 > 1] \quad (\text{VIII, 398}).$$

$$3) \int \int (1 \pm 2p \cos 2x + p^2) \cdot \sin^2 x \frac{dx}{x} = \mp \frac{1}{4} p \pi [p^2 < 1] = \mp \frac{1}{4} p \pi + \frac{\pi}{2} \int p [p^2 > 1] \quad (\text{VIII, 398}).$$

$$4) \int \int (1 \pm 2p \cos 2x + p^2) \cdot \sin x \cdot \cos^2 x \frac{dx}{x} = \pm \frac{1}{4} p \pi [p^2 < 1], = \pm \frac{1}{4} p \pi + \frac{\pi}{2} \int p [p^2 > 1] \quad (\text{VIII, 398}).$$

$$5) \int \int (1 \pm 2p \cos 2x + p^2) \cdot \sin^2 x \cdot \text{Tg } x \frac{dx}{x} = \mp \frac{1}{4} p \pi [p^2 < 1], = \mp \frac{1}{4} p \pi + \frac{\pi}{2} \int p [p^2 > 1] \quad (\text{VIII, 398}).$$

$$6) \int \int (1 \pm 2p \cos 2x + p^2) \cdot \text{Tg } x \frac{dx}{x} = 0 [p^2 < 1], = \pi \int p [p^2 > 1] \quad (\text{VIII, 398}).$$

$$7) \int \int (1 \pm 2p \cos 4x + p^2) \cdot \sin^2 x \cdot \cos x \frac{dx}{x} = \mp \frac{1}{16} p \pi [p^2 < 1] = \mp \frac{1}{16} p \pi + \frac{\pi}{8} \int p [p^2 > 1] \quad (\text{VIII, 398}).$$

F. Alg. rat. fract. à dén. x ;

Log. $l(1 + 2p \cos x + p^2)$; TABLE 410, suite.

Lim. 0 et ∞ .

Circ. Directe rat.

$$8) \int l(1 \pm 2p \cos 4x + p^2) \cdot \cos^2 2x \cdot \operatorname{Tg} x \frac{dx}{x} = \pm \frac{1}{4} p \pi [p^2 < 1], = \pm \frac{1}{4} p \pi + \frac{\pi}{2} l p [p^2 > 1]$$

(VIII, 398).

$$9) \int l(1 \pm 2p \cos 4x + p^2) \cdot \operatorname{Tg} x \frac{dx}{x} = 0 [p^2 < 1], = \pi l p [p^2 > 1] \text{ (VIII, 398).}$$

$$10) \int l(1 \pm 2p \cos 2x + p^2) \cdot \sin x \cdot \cos 2ax \frac{dx}{x} = -\frac{\pi}{2a} (\mp p)^a \text{ (VIII, 398).}$$

$$11) \int l(1 \pm 2p \cos 2x + p^2) \cdot \operatorname{Tg} x \cdot \cos 2ax \frac{dx}{x} = -\frac{\pi}{2a} (\mp p)^a \text{ (VIII, 399).}$$

$$12) \int l(1 \pm 2p \cos 4x + p^2) \cdot \operatorname{Tg} x \cdot \cos 4ax \frac{dx}{x} = -\frac{\pi}{2a} (\mp p)^a \text{ (VIII, 399).}$$

$$13) \int l(1 - 2p \sin^2 x \cdot \cos 2x + p^2 \sin^4 x) \cdot \sin x \frac{dx}{x} = l \frac{p+4}{4} \text{ Bronwin, L. \& E. Phil. Mag. 24, 491.}$$

F. Alg. rat. fract. à dén. x ;

Log. d'autre forme;

TABLE 411.

Lim. 0 et ∞ .

Circ. Directe rat.

$$1) \int l(px) \cdot \sin qx \frac{dx}{x} = \frac{\pi}{2} \left(l \frac{p}{q} - A \right) \text{ (VIII, 457).} \quad 2) \int l \sin rx \cdot \sin x \frac{dx}{x} = -\frac{\pi}{2} l 2 \text{ (H, 15).}$$

$$3) \int l \cos rx \cdot \sin x \frac{dx}{x} = -\frac{\pi}{2} l 2 \text{ (H, 15).}$$

$$4) \int l \operatorname{Tg} rx \cdot \sin x \frac{dx}{x} = 0 \text{ (H, 15).}$$

$$5) \int l x \cdot \sin qx \frac{dx}{x^{1-p}} = \frac{1}{q^p} \left\{ \sin \frac{1}{2} p \pi \cdot Z'(p) - \sin \frac{1}{2} p \pi \cdot l q + \frac{\pi}{2} \cos \frac{1}{2} p \pi \right\} \Gamma(p) [p < 1] \text{ (IV, 534).}$$

$$6) \int l x \cdot \cos qx \frac{dx}{x^{1-p}} = \frac{1}{q^p} \left\{ \cos \frac{1}{2} p \pi \cdot Z'(p) - \cos \frac{1}{2} p \pi \cdot l q - \frac{\pi}{2} \sin \frac{1}{2} p \pi \right\} \Gamma(p) [p < 1] \text{ (IV, 534).}$$

$$7) \int l x \cdot \sin px \cdot \cos qx \frac{dx}{x} = -\frac{\pi}{2} \left\{ A + \frac{1}{2} l(p^2 - q^2) \right\} [p > q], = \frac{1}{4} l \frac{q-p}{q+p} [p < q]$$

Schlömilch, Schl. Z. 7, 262.

$$8) \int l(1+x) \cdot \cos px \frac{dx}{x} = \frac{1}{2} \{ Ci(p) \}^2 + \frac{1}{2} \left\{ \frac{\pi}{2} - Si(p) \right\}^2 \text{ Enneper, Schl. Z. 6, 405.}$$

$$9) \int l(1+x^2) \cdot \sin qx \frac{dx}{x} = -\pi li(e^{-q}) \text{ (IV, 533).}$$

$$10) \int l(q^2 + x^2) \cdot \left\{ l(1 + p^2 \operatorname{Tg}^2 rx) - \frac{2p^2 x \operatorname{Tg} rx}{\cos^2 rx + p^2 \sin^2 rx} \right\} \frac{dx}{x^2} = \frac{2\pi}{q} \left\{ 1 + p \frac{e^{qr} - e^{-qr}}{e^{qr} + e^{-qr}} \right\}$$

V. T. 421, N. 1.

$$11) \int l(1 + p \sin^2 x) \cdot \sin x \frac{dx}{x} = \pi l \frac{1 + \sqrt{1+p}}{2} \text{ (VIII, 397).}$$

$$12) \int l(1 + p \sin^2 x) \cdot \sin x \cdot \cos x \frac{dx}{x} = \frac{\pi}{4} \frac{1 - \sqrt{1+p}}{1 + \sqrt{1+p}} + \frac{\pi}{2} l \frac{1 + \sqrt{1+p}}{2} \text{ (VIII, 397).}$$

$$13) \int l(1 + p \sin^2 x) \cdot \sin^2 x \frac{dx}{x} = \frac{\pi}{4} \frac{\sqrt{1+p} - 1}{\sqrt{1+p} + 1} + \frac{\pi}{2} l \frac{1 + \sqrt{1+p}}{2} \text{ (VIII, 397).}$$

$$14) \int l(1 + p \sin^2 x) \cdot \sin x \cdot \cos^2 x \frac{dx}{x} = \frac{\pi}{4} \frac{1 - \sqrt{1+p}}{1 + \sqrt{1+p}} + \frac{\pi}{2} l \frac{1 + \sqrt{1+p}}{2} \text{ (VIII, 397).}$$

$$15) \int l(1 + p \sin^2 x) \cdot \sin^2 x \cdot \operatorname{Tg} x \frac{dx}{x} = \frac{\pi}{4} \frac{\sqrt{1+p} - 1}{\sqrt{1+p} + 1} + \frac{\pi}{2} l \frac{1 + \sqrt{1+p}}{2} \text{ (VIII, 397).}$$

$$16) \int l(1 + p \sin^2 x) \cdot \operatorname{Tg} x \frac{dx}{x} = \frac{\pi}{2} l \frac{1 + \sqrt{1+p}}{2} \text{ (VIII, 397).}$$

$$17) \int l(1 + p \sin^2 2x) \cdot \sin^2 x \cdot \cos x \frac{dx}{x} = \frac{\pi}{16} \frac{\sqrt{1+p} - 1}{\sqrt{1+p} + 1} + \frac{\pi}{8} l \frac{1 + \sqrt{1+p}}{2} \text{ (VIII, 397).}$$

$$18) \int l(1 + p^2 \sin^2 2x) \cdot \cos^2 2x \cdot \operatorname{Tg} x \frac{dx}{x} = \frac{\pi}{4} \frac{1 - \sqrt{1+p}}{1 + \sqrt{1+p}} + \frac{\pi}{2} l \frac{1 + \sqrt{1+p}}{2} \text{ (VIII, 397).}$$

$$19) \int l(1 + p \sin^2 2x) \cdot \operatorname{Tg} x \frac{dx}{x} = \frac{\pi}{2} l \frac{1 + \sqrt{1+p}}{2} \text{ (VIII, 397).}$$

$$20) \int l(1 + p^2 \operatorname{Tg}^2 x) \cdot l(1 + q^2 \operatorname{Cot}^2 x) \frac{dx}{x \sin x} = 2\pi \frac{1 + pq}{q} l(1 + pq) - 2p\pi \text{ (VIII, 399).}$$

$$21) \int l(1 + p^2 \operatorname{Tg}^2 x) \cdot l(1 + q^2 \operatorname{Cot}^2 x) \frac{dx}{x \sin x \cdot \cos x} = 2\pi \frac{1 + pq}{q} l(1 + pq) - 2p\pi \text{ (VIII, 399).}$$

$$22) \int l(1 + p^2 \operatorname{Tg}^2 x) \cdot l(1 + q^2 \operatorname{Cot}^2 x) \frac{\sin x}{x \cos^2 x} dx = 2\pi \frac{1 + pq}{p} l(1 + pq) - 2q\pi \text{ (VIII, 399).}$$

$$23) \int l(1 + p^2 \operatorname{Tg}^2 x) \cdot l(1 + q^2 \operatorname{Cot}^2 x) \frac{\sin x}{x \cos^3 x} dx = 2\pi \frac{1 + pq}{p} l(1 + pq) - 2q\pi \text{ (VIII, 399).}$$

$$24) \int l(1 + p^2 \operatorname{Tg}^2 2x) \cdot l(1 + q^2 \operatorname{Cot}^2 2x) \frac{dx}{x \sin x \cdot \cos^2 x} = 8\pi \frac{1 + pq}{p} l(1 + pq) - 8p\pi \text{ (VIII, 399).}$$

$$25) \int l(1 + p^2 \operatorname{Tg}^2 2x) \cdot l(1 + q^2 \operatorname{Cot}^2 2x) \frac{\operatorname{Tg} x}{x \cos^2 2x} dx = 2\pi \frac{1 + pq}{q} l(1 + pq) - 2q\pi \text{ (VIII, 399).}$$

F. Alg. rat. fract. à dén. x ;

Log. $\int (1 - p^2 \sin^2 x)$;

TABLE 412.

Lim. 0 et ∞ .

Circ. Dir. irrat. $\sqrt{1 - p^2 \sin^2 x}$; [$p^2 < 1$].

$$1) \int \int (1 - p^2 \sin^2 x) \cdot \sin x \cdot \sqrt{1 - p^2 \sin^2 x} \frac{dx}{x} = (2 - p^2) F'(p) - \left\{ 2 - \frac{1}{2} \int (1 - p^2) \right\} E'(p)$$

$$2) \int \int (1 - p^2 \sin^2 x) \cdot \operatorname{Tg} x \cdot \sqrt{1 - p^2 \sin^2 x} \frac{dx}{x} = (2 - p^2) F'(p) - \left\{ 2 - \frac{1}{2} \int (1 - p^2) \right\} E'(p)$$

$$3) \int \int (1 - p^2 \sin^2 2x) \cdot \operatorname{Tg} x \cdot \sqrt{1 - p^2 \sin^2 2x} \frac{dx}{x} = (2 - p^2) F'(p) - \left\{ 2 - \frac{1}{2} \int (1 - p^2) \right\} E'(p)$$

Sur 1) à 3) voyez VIII, 399.

$$4) \int \int (1 - p^2 \sin^2 x) \frac{\sin x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{2} \int (1 - p^2) \cdot F'(p) \text{ (VIII, 400).}$$

$$5) \int \int (1 - p^2 \sin^2 x) \frac{\sin x \cdot \cos x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{p^2} \left\{ (2 - p^2) - \frac{1}{2} (1 - p^2) \int (1 - p^2) \right\} F'(p) - \\ - \frac{1}{p^2} \left\{ 2 - \frac{1}{2} \int (1 - p^2) \right\} E'(p) \text{ (VIII, 400).}$$

$$6) \int \int (1 - p^2 \sin^2 x) \frac{\sin^3 x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{p^2} \left\{ (p^2 - 2) + \frac{1}{2} \int (1 - p^2) \right\} F'(p) + \\ + \frac{1}{p^2} \left\{ 2 - \frac{1}{2} \int (1 - p^2) \right\} E'(p) \text{ (VIII, 400).}$$

$$7) \int \int (1 - p^2 \sin^2 x) \frac{\sin x \cdot \cos^2 x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{p^2} \left\{ (2 - p^2) - \frac{1}{2} (1 - p^2) \int (1 - p^2) \right\} F'(p) - \\ - \frac{1}{p^2} \left\{ 2 - \frac{1}{2} \int (1 - p^2) \right\} E'(p) \text{ (VIII, 400).}$$

$$8) \int \int (1 - p^2 \sin^2 x) \frac{\sin^3 x \cdot \operatorname{Tg} x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{p^2} \left\{ (p^2 - 2) + \frac{1}{2} \int (1 - p^2) \right\} F'(p) + \\ + \frac{1}{p^2} \left\{ 2 - \frac{1}{2} \int (1 - p^2) \right\} E'(p) \text{ (VIII, 400).}$$

$$9) \int \int (1 - p^2 \sin^2 x) \frac{\operatorname{Tg} x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{2} \int (1 - p^2) \cdot F'(p) \text{ (VIII, 400).}$$

$$10) \int \int (1 - p^2 \sin^2 2x) \frac{\sin^3 x \cdot \cos x}{\sqrt{1 - p^2 \sin^2 2x}} \frac{dx}{x} = \frac{1}{4p^2} \left\{ (p^2 - 2) + \frac{1}{2} \int (1 - p^2) \right\} F'(p) + \\ + \frac{1}{4p^2} \left\{ 2 - \frac{1}{2} \int (1 - p^2) \right\} E'(p) \text{ (VIII, 400).}$$

$$11) \int \int (1 - p^2 \sin^2 2x) \frac{\cos^2 2x \cdot \operatorname{Tg} x}{\sqrt{1 - p^2 \sin^2 2x}} \frac{dx}{x} = \frac{1}{p^2} \left\{ (2 - p^2) - \frac{1}{2} (1 - p^2) \int (1 - p^2) \right\} F'(p) - \\ - \frac{1}{p^2} \left\{ 2 - \frac{1}{2} \int (1 - p^2) \right\} E'(p) \text{ (VIII, 400).}$$

F. Alg. rat. fract. à dén. x ;

Log. $\int (1-p^2 \sin^2 x)$;

Circ. Dir. irrat. $\sqrt{1-p^2 \sin^2 x}$; [$p^2 < 1$].

TABLE 412, suite.

Lim. 0 et ∞ .

$$12) \int \int (1-p^2 \sin^2 2x) \frac{Tgx}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{1}{2} \int (1-p^2) \cdot F'(p) \quad (\text{VIII}, 400).$$

$$13) \int \int (1-p^2 \sin^2 x) \frac{\sin x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{2(1-p^2)} [2(p^2-2)F'(p) + \{4 + \int (1-p^2)\} E'(p)] \quad (\text{VIII}, 402).$$

$$14) \int \int (1-p^2 \sin^2 x) \frac{\sin x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{2p^2} [\{2(2-p^2) + \int (1-p^2)\} F'(p) - \{4 + \int (1-p^2)\} E'(p)] \quad (\text{VIII}, 402).$$

$$15) \int \int (1-p^2 \sin^2 x) \frac{\sin^3 x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{p^2(1-p^2)} \left[\left\{ 2 + \frac{1}{2} \int (1-p^2) \right\} E'(p) - \left\{ (2-p^2) + \frac{1}{2} (1-p^2) \int (1-p^2) \right\} F'(p) \right] \quad (\text{VIII}, 402).$$

$$16) \int \int (1-p^2 \sin^2 x) \frac{\sin x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{2p^2} [\{2(2-p^2) + \int (1-p^2)\} F'(p) - \{4 + \int (1-p^2)\} E'(p)] \quad (\text{VIII}, 402).$$

$$17) \int \int (1-p^2 \sin^2 x) \frac{\sin^3 x \cdot Tgx}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{p^2(1-p^2)} \left[\left\{ 2 + \frac{1}{2} \int (1-p^2) \right\} E'(p) - \left\{ (2-p^2) + \frac{1}{2} (1-p^2) \int (1-p^2) \right\} F'(p) \right] \quad (\text{VIII}, 402).$$

$$18) \int \int (1-p^2 \sin^2 x) \frac{Tgx}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{2(1-p^2)} [2(p^2-2)F'(p) + \{4 + \int (1-p^2)\} E'(p)] \quad (\text{VIII}, 402).$$

$$19) \int \int (1-p^2 \sin^2 2x) \frac{\sin^3 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{1}{4p^2(1-p^2)} \left[\left\{ 2 + \frac{1}{2} \int (1-p^2) \right\} E'(p) - \left\{ (2-p^2) + \frac{1}{2} (1-p^2) \int (1-p^2) \right\} F'(p) \right] \quad (\text{VIII}, 402).$$

$$20) \int \int (1-p^2 \sin^2 2x) \frac{\cos^3 2x \cdot Tgx}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{1}{2p^2} [\{2(2-p^2) + \int (1-p^2)\} F'(p) - \{4 + \int (1-p^2)\} E'(p)] \quad (\text{VIII}, 402).$$

$$21) \int \int (1-p^2 \sin^2 2x) \frac{Tgx}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{1}{2(1-p^2)} [2(p^2-2)F'(p) + \{4 + \int (1-p^2)\} E'(p)] \quad (\text{VIII}, 402).$$

F. Alg. rat. fract. à dén. x ;

Log. $\int (1 + q \sin^2 x)$;

TABLE 413.

Lim. 0 et ∞

Circ. Dir. irrat. $\sqrt{1 - p^2 \sin^2 x}$; [$p^2 < 1$].

$$1) \int \int (1 + p \sin^2 x) \frac{\sin x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{2} \int \left\{ \frac{2(1+p)}{\sqrt{p}} \right\} \cdot F'(p) - \frac{\pi}{8} F' \{ \sqrt{1-p^2} \} \quad (\text{VIII, 401}).$$

$$2) \int \int (1 + p \sin^2 x) \frac{Tg x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{2} \int \left\{ \frac{2(1+p)}{\sqrt{p}} \right\} \cdot F'(p) - \frac{\pi}{8} F' \{ \sqrt{1-p^2} \} \quad (\text{VIII, 401}).$$

$$3) \int \int (1 + p \sin^2 2x) \frac{Tg x}{\sqrt{1 - p^2 \sin^2 2x}} \frac{dx}{x} = \frac{1}{2} \int \left\{ \frac{2(1+p)}{\sqrt{p}} \right\} \cdot F'(p) - \frac{\pi}{8} F' \{ \sqrt{1-p^2} \} \quad (\text{VIII, 401}).$$

$$4) \int \int (1 - p \sin^2 x) \frac{\sin x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{2} \int \left\{ \frac{2(1-p)}{\sqrt{p}} \right\} \cdot F'(p) - \frac{\pi}{8} F' \{ \sqrt{1-p^2} \} \quad (\text{VIII, 401}).$$

$$5) \int \int (1 - p \sin^2 x) \frac{Tg x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{2} \int \left\{ \frac{2(1-p)}{\sqrt{p}} \right\} \cdot F'(p) - \frac{\pi}{8} F' \{ \sqrt{1-p^2} \} \quad (\text{VIII, 401}).$$

$$6) \int \int (1 - p \sin^2 2x) \frac{Tg x}{\sqrt{1 - p^2 \sin^2 2x}} \frac{dx}{x} = \frac{1}{2} \int \left\{ \frac{2(1-p)}{\sqrt{p}} \right\} \cdot F'(p) - \frac{\pi}{8} F' \{ \sqrt{1-p^2} \} \quad (\text{VIII, 401}).$$

$$7) \int \int (1 - p^2 \sin^4 x) \frac{\sin x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{2} \int \left\{ \frac{4(1-p^2)}{p} \right\} \cdot F'(p) - \frac{\pi}{4} F' \{ \sqrt{1-p^2} \} \quad (\text{VIII, 401}).$$

$$8) \int \int (1 - p^2 \sin^4 x) \frac{Tg x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{2} \int \left\{ \frac{4(1-p^2)}{p} \right\} \cdot F'(p) - \frac{\pi}{4} F' \{ \sqrt{1-p^2} \} \quad (\text{VIII, 401}).$$

$$9) \int \int (1 - p^2 \sin^4 2x) \frac{Tg x}{\sqrt{1 - p^2 \sin^2 2x}} \frac{dx}{x} = \frac{1}{2} \int \left\{ \frac{4(1-p^2)}{p} \right\} \cdot F'(p) - \frac{\pi}{4} F' \{ \sqrt{1-p^2} \} \quad (\text{VIII, 401}).$$

$$10) \int \int (1 - p^2 \sin^2 \lambda \cdot \sin^2 x) \frac{\sin x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = E'(p) \cdot \{ F(p, \lambda) \}^2 - 2 F'(p) \cdot T(p, \lambda) \quad (\text{VIII, 403}).$$

$$11) \int \int (1 - p^2 \sin^2 \lambda \cdot \sin^2 x) \frac{Tg x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = E'(p) \cdot \{ F(p, \lambda) \}^2 - 2 F'(p) \cdot T(p, \lambda) \quad (\text{VIII, 403}).$$

$$12) \int \int (1 - p^2 \sin^2 \lambda \cdot \sin^2 2x) \frac{Tg x}{\sqrt{1 - p^2 \sin^2 2x}} \frac{dx}{x} = E'(p) \cdot \{ F(p, \lambda) \}^2 - 2 F'(p) \cdot T(p, \lambda) \quad (\text{VIII, 403}).$$

$$13) \int \int (1 + \cot^2 \lambda \cdot \sin^2 x) \frac{\sin x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = \pi F \{ \sqrt{1-p^2}, \lambda \} - 2 F'(p) \cdot T \{ \sqrt{1-p^2}, \lambda \} - \\ - 2 F'(p) \cdot \int \sin \lambda - \frac{\pi}{2} F' \{ \sqrt{1-p^2} \} - F'(p) \cdot \int p - \{ E'(p) - F'(p) \} [F \{ \sqrt{1-p^2}, \lambda \}]^2 \\ (\text{VIII, 403}).$$

$$14) \int \int (1 + \cot^2 \lambda \cdot \sin^2 x) \frac{Tg x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = \pi F \{ \sqrt{1-p^2}, \lambda \} - 2 F'(p) \cdot T \{ \sqrt{1-p^2}, \lambda \} - \\ - 2 F'(p) \cdot \int \sin \lambda - \frac{\pi}{2} F' \{ \sqrt{1-p^2} \} - F'(p) \cdot \int p - \{ E'(p) - F'(p) \} [F \{ \sqrt{1-p^2}, \lambda \}]^2 \\ (\text{VIII, 403}).$$

F. Alg. rat. fract. à dén. x ;

Log. $\int (1 + q \sin^2 x)$;

TABLE 413, suite.

Lim. 0 et ∞ .

Circ. Dir. irrat. $\sqrt{1-p^2} \sin^2 x$; [$p^2 < 1$].

$$15) \int \int (1 + \cot^2 \lambda \cdot \sin^2 2x) \frac{Tgx}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \pi F\{\sqrt{1-p^2}, \lambda\} - 2F'(p) \cdot T\{\sqrt{1-p^2}, \lambda\} - \\ - 2F'(p) \cdot \int \sin \lambda - \frac{\pi}{2} F'\{\sqrt{1-p^2}\} - F'(p) \cdot \int p - \{E'(p) - F'(p)\} [F\{\sqrt{1-p^2}, \lambda\}]^2$$

(VIII, 404).

$$16) \int \int [1 - \{1 - (1-p^2) \sin^2 \lambda\} \sin^2 x] \frac{\sin x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \pi F\{\sqrt{1-p^2}, \lambda\} - \\ - 2F'(p) \cdot T\{\sqrt{1-p^2}, \lambda\} + \frac{1}{2} F'(p) \cdot \int \frac{1-p^2}{p^2} - \frac{\pi}{2} F'\{\sqrt{1-p^2}\} + \\ + \{F'(p) - E'(p)\} [F\{\sqrt{1-p^2}, \lambda\}]^2 \text{ (VIII, 404).}$$

$$17) \int \int [1 - \{1 - (1-p^2) \sin^2 \lambda\} \sin^2 x] \frac{Tgx}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \pi F\{\sqrt{1-p^2}, \lambda\} - \\ - 2F'(p) \cdot T\{\sqrt{1-p^2}, \lambda\} + \frac{1}{2} F'(p) \cdot \int \frac{1-p^2}{p^2} - \frac{\pi}{2} F'\{\sqrt{1-p^2}\} + \\ + \{F'(p) - E'(p)\} [F\{\sqrt{1-p^2}, \lambda\}]^2 \text{ (VIII, 404).}$$

$$18) \int \int [1 - \{1 - (1-p^2) \sin^2 \lambda\} \sin^2 2x] \frac{Tgx}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \pi F\{\sqrt{1-p^2}, \lambda\} - \\ - 2F'(p) \cdot T\{\sqrt{1-p^2}, \lambda\} + \frac{1}{2} F'(p) \cdot \int \frac{1-p^2}{p^2} - \frac{\pi}{2} F'\{\sqrt{1-p^2}\} + \\ + \{F'(p) - E'(p)\} [F\{\sqrt{1-p^2}, \lambda\}]^2 \text{ (VIII, 404).}$$

$$19) \int \int \{\sin^2 x \cdot \sqrt{1-p^2} + \cos^2 x\} \frac{\sin x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{2} \int \left\{ \frac{2\sqrt[4]{1-p^2}}{1+\sqrt{1-p^2}} \right\} \cdot F'(p) \text{ (VIII, 405).}$$

$$20) \int \int \{\sin^2 x \cdot \sqrt{1-p^2} + \cos^2 x\} \frac{Tgx}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{2} \int \left\{ \frac{2\sqrt[4]{1-p^2}}{1+\sqrt{1-p^2}} \right\} \cdot F'(p) \text{ (VIII, 405).}$$

$$21) \int \int \{\sin^2 2x \cdot \sqrt{1-p^2} + \cos^2 2x\} \frac{Tgx}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{1}{2} \int \left\{ \frac{2\sqrt[4]{1-p^2}}{1+\sqrt{1-p^2}} \right\} \cdot F'(p) \text{ (VIII, 405).}$$

F. Alg. rat. fract. à dén. x ;

Log. $\int (1 - p^2 \cos^2 x)$;

TABLE 414.

Lim. 0 et ∞ .

Circ. Dir. irrat. $\sqrt{1 - p^2 \cos^2 x}$; [$p^2 < 1$].

$$1) \int \int (1 - p^2 \cos x) \cdot \sin x \cdot \sqrt{1 - p^2 \cos^2 x} \frac{dx}{x} = (2 - p^2) F'(p) - \left\{ 2 - \frac{1}{2} \int (1 - p^2) \right\} E'(p) \quad (\text{VIII, 399}).$$

$$2) \int \int (1 - p^2 \cos^2 x) \cdot \text{Tg } x \cdot \sqrt{1 - p^2 \cos^2 x} \frac{dx}{x} = (2 - p^2) F'(p) - \left\{ 2 - \frac{1}{2} \int (1 - p^2) \right\} E'(p) \quad (\text{VIII, 400}).$$

$$3) \int \int (1 - p^2 \cos^2 2x) \cdot \text{Tg } x \cdot \sqrt{1 - p^2 \cos^2 2x} \frac{dx}{x} = (2 - p^2) F'(p) - \left\{ 2 - \frac{1}{2} \int (1 - p^2) \right\} E'(p) \quad (\text{VIII, 400}).$$

$$4) \int \int (1 - p^2 \cos^2 x) \frac{\sin x}{\sqrt{1 - p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{2} \int (1 - p^2) \cdot F'(p) \quad (\text{VIII, 401}).$$

$$5) \int \int (1 - p^2 \cos^2 x) \frac{\sin x \cdot \cos x}{\sqrt{1 - p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{p^2} \left\{ (p^2 - 2) + \frac{1}{2} \int (1 - p^2) \right\} F'(p) + \frac{1}{p^2} \left\{ 2 - \frac{1}{2} \int (1 - p^2) \right\} E'(p) \quad (\text{VIII, 400}).$$

$$6) \int \int (1 - p^2 \cos^2 x) \frac{\sin^2 x}{\sqrt{1 - p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{p^2} \left\{ (2 - p^2) - \frac{1}{2} (1 - p^2) \int (1 - p^2) \right\} F'(p) - \frac{1}{p^2} \left\{ 2 - \frac{1}{2} \int (1 - p^2) \right\} E'(p) \quad (\text{VIII, 400}).$$

$$7) \int \int (1 - p^2 \cos^2 x) \frac{\sin x \cdot \cos^2 x}{\sqrt{1 - p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{p^2} \left[\left\{ (p^2 - 2) + \frac{1}{2} \int (1 - p^2) \right\} F'(p) + \frac{1}{p^2} \left\{ 2 - \frac{1}{2} \int (1 - p^2) \right\} E'(p) \right] \quad (\text{VIII, 400}).$$

$$8) \int \int (1 - p^2 \cos^2 x) \frac{\sin^2 x \cdot \text{Tg } x}{\sqrt{1 - p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{p^2} \left\{ (2 - p^2) - \frac{1}{2} (1 - p^2) \int (1 - p^2) \right\} F'(p) - \frac{1}{p^2} \left\{ 2 - \frac{1}{2} \int (1 - p^2) \right\} E'(p) \quad (\text{VIII, 400}).$$

$$9) \int \int (1 - p^2 \cos^2 x) \frac{\text{Tg } x}{\sqrt{1 - p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{2} \int (1 - p^2) \cdot F'(p) \quad (\text{VIII, 401}).$$

$$10) \int \int (1 - p^2 \cos^2 2x) \frac{\sin^2 x \cdot \cos x}{\sqrt{1 - p^2 \cos^2 2x}} \frac{dx}{x} = \frac{1}{4p^2} \left\{ (2 - p^2) - \frac{1}{2} (1 - p^2) \int (1 - p^2) \right\} F'(p) - \frac{1}{4p^2} \left\{ 2 - \frac{1}{2} \int (1 - p^2) \right\} E'(p) \quad (\text{VIII, 400}).$$

F. Alg. rat. fract. à dén. x ;

Log. $\int (1-p^2 \cos^2 x)$;

TABLE 414, suite.

Lim. 0 et ∞ .

Circ. Dir. irrat. $\sqrt{1-p^2 \cos^2 x}$; [$p^2 < 1$].

$$11) \int \int (1-p^2 \cos^2 2x) \frac{\cos^2 2x \cdot \text{Tg } x}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{1}{p^2} \left\{ (p^2-2) + \frac{1}{2} \int (1-p^2) \right\} F'(p) + \\ + \frac{1}{p^2} \left\{ 2 - \frac{1}{2} \int (1-p^2) \right\} E'(p) \text{ (VIII, 401).}$$

$$12) \int \int (1-p^2 \cos^2 2x) \frac{\text{Tg } x}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{1}{2} \int (1-p^2) \cdot F'(p) \text{ (VIII, 401).}$$

$$13) \int \int (1-p^2 \cos^2 x) \frac{\sin x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{2(1-p^2)} [2(p^2-2)F'(p) + \{4 + \int (1-p^2)\} E'(p)]$$

$$14) \int \int (1-p^2 \cos^2 x) \frac{\sin x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{p^2(1-p^2)} \left[\left\{ 2 + \frac{1}{2} \int (1-p^2) \right\} E'(p) - \right. \\ \left. - \left\{ (2-p^2) + \frac{1}{2} (1-p^2) \int (1-p^2) \right\} F'(p) \right]$$

$$15) \int \int (1-p^2 \cos^2 x) \frac{\sin^2 x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{2p^2} [\{2(2-p^2) + \int (1-p^2)\} F'(p) - \\ - \{4 + \int (1-p^2)\} E'(p)]$$

$$16) \int \int (1-p^2 \cos^2 x) \frac{\sin x \cdot \cos^2 x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{p^2(1-p^2)} \left[\left\{ 2 + \frac{1}{2} \int (1-p^2) \right\} E'(p) - \right. \\ \left. - \left\{ (2-p^2) + \frac{1}{2} (1-p^2) \int (1-p^2) \right\} F'(p) \right]$$

$$17) \int \int (1-p^2 \cos^2 x) \frac{\sin^2 x \cdot \text{Tg } x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{2p^2} [\{2(2-p^2) + \int (1-p^2)\} F'(p) - \\ - \{4 + \int (1-p^2)\} E'(p)]$$

$$18) \int \int (1-p^2 \cos^2 x) \frac{\text{Tg } x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{2(1-p^2)} [2(p^2-2)F'(p) + \{4 + \int (1-p^2)\} E'(p)]$$

$$19) \int \int (1-p^2 \cos^2 2x) \frac{\sin x \cdot \cos^2 x}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{1}{8p^2} [\{2(2-p^2) + \int (1-p^2)\} F'(p) - \\ - \{4 + \int (1-p^2)\} E'(p)]$$

$$20) \int \int (1-p^2 \cos^2 2x) \frac{\cos^2 2x \cdot \text{Tg } x}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{1}{p^2(1-p^2)} \left[\left\{ 2 + \frac{1}{2} \int (1-p^2) \right\} E'(p) - \right. \\ \left. - \left\{ (2-p^2) + \frac{1}{2} (1-p^2) \int (1-p^2) \right\} F'(p) \right]$$

$$21) \int \int (1-p^2 \cos^2 2x) \frac{\text{Tg } x}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{1}{2(1-p^2)} [2(p^2-2)F'(p) + \{4 + \int (1-p^2)\} E'(p)]$$

Sur 13) à 21) voyez VIII, 403.

F. Alg. rat. fract. à dén. x ;

Log. $l(1 + q \cos^2 x)$;

TABLE 415.

Lim. 0 et ∞ .

Circ. Dir. irrat. $\sqrt{1-p^2} \cos^2 x$; [$p^2 < 1$].

$$1) \int l(1 + p \cos^2 x) \frac{\sin x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{2} l \left\{ \frac{2(1+p)}{\sqrt{p}} \right\} \cdot F'(p) - \frac{\pi}{8} F' \{ \sqrt{1-p^2} \} \quad (\text{VIII}, 401).$$

$$2) \int l(1 + p \cos^2 x) \frac{\text{Tg } x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{2} l \left\{ \frac{2(1+p)}{\sqrt{p}} \right\} \cdot F'(p) - \frac{\pi}{8} F' \{ \sqrt{1-p^2} \} \quad (\text{VIII}, 401).$$

$$3) \int l(1 + p \cos^2 2x) \frac{\text{Tg } x}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{1}{2} l \left\{ \frac{2(1+p)}{\sqrt{p}} \right\} \cdot F'(p) - \frac{\pi}{8} F' \{ \sqrt{1-p^2} \}$$

$$4) \int l(1 - p \cos^2 x) \frac{\sin x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{2} l \left\{ \frac{2(1-p)}{\sqrt{p}} \right\} \cdot F'(p) - \frac{\pi}{8} F' \{ \sqrt{1-p^2} \}$$

$$5) \int l(1 - p \cos^2 x) \frac{\text{Tg } x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{2} l \left\{ \frac{2(1-p)}{\sqrt{p}} \right\} \cdot F'(p) - \frac{\pi}{8} F' \{ \sqrt{1-p^2} \}$$

$$6) \int l(1 - p \cos^2 2x) \frac{\text{Tg } x}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{1}{2} l \left\{ \frac{2(1-p)}{\sqrt{p}} \right\} \cdot F'(p) - \frac{\pi}{8} F' \{ \sqrt{1-p^2} \}$$

$$7) \int l(1 - p^2 \cos^4 x) \frac{\sin x}{\sqrt{1-p^2 \cos^4 x}} \frac{dx}{x} = \frac{1}{2} l \left\{ \frac{4(1-p^2)}{p} \right\} \cdot F'(p) - \frac{\pi}{4} F' \{ \sqrt{1-p^2} \}$$

$$8) \int l(1 - p^2 \cos^4 x) \frac{\text{Tg } x}{\sqrt{1-p^2 \cos^4 x}} \frac{dx}{x} = \frac{1}{2} l \left\{ \frac{4(1-p^2)}{p} \right\} \cdot F'(p) - \frac{\pi}{4} F' \{ \sqrt{1-p^2} \}$$

$$9) \int l(1 - p^2 \cos^4 2x) \frac{\text{Tg } x}{\sqrt{1-p^2 \cos^4 2x}} \frac{dx}{x} = \frac{1}{2} l \left\{ \frac{4(1-p^2)}{p} \right\} \cdot F'(p) - \frac{\pi}{4} F' \{ \sqrt{1-p^2} \}$$

Sur 3) à 9) voyez VIII, 402.

$$10) \int l(1 - p^2 \sin^2 \lambda \cdot \cos^2 x) \frac{\sin x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = E'(p) \cdot \{F(p, \lambda)\}^2 - 2F'(p) \cdot T(p, \lambda) \quad (\text{VIII}, 404).$$

$$11) \int l(1 - p^2 \sin^2 \lambda \cdot \cos^2 x) \frac{\text{Tg } x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = E'(p) \cdot \{F(p, \lambda)\}^2 - 2F'(p) \cdot T(p, \lambda) \quad (\text{VIII}, 404).$$

$$12) \int l(1 - p^2 \sin^2 \lambda \cdot \cos^2 2x) \frac{\text{Tg } x}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = E'(p) \cdot \{F(p, \lambda)\}^2 - 2F'(p) \cdot T(p, \lambda) \quad (\text{VIII}, 404).$$

$$13) \int l(1 + \cot^2 \lambda \cdot \cos^2 x) \frac{\sin x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \pi F \{ \sqrt{1-p^2}, \lambda \} - 2F'(p) \cdot T \{ \sqrt{1-p^2}, \lambda \} - \\ - 2F'(p) \cdot l \sin \lambda - \frac{\pi}{2} F' \{ \sqrt{1-p^2} \} - F'(p) \cdot lp - \{E'(p) - F'(p)\} [F \{ \sqrt{1-p^2}, \lambda \}]^2 \quad (\text{VIII}, 404).$$

$$14) \int l(1 + \cot^2 \lambda \cdot \cos^2 x) \frac{\text{Tg } x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \pi F \{ \sqrt{1-p^2}, \lambda \} - 2F'(p) \cdot T \{ \sqrt{1-p^2}, \lambda \} - \\ - 2F'(p) \cdot l \sin \lambda - \frac{\pi}{2} F' \{ \sqrt{1-p^2} \} - F'(p) \cdot lp - \{E'(p) - F'(p)\} [F \{ \sqrt{1-p^2}, \lambda \}]^2 \quad (\text{VIII}, 404).$$

F. Alg. rat. fract. à dén. x ;

Log. $\int (1 + q \cos^2 x)$;

TABLE 415, suite.

Lim. 0 et ∞ .

Circ. Dir. irrat. $\sqrt{1-p^2} \cos^2 x$; [$p^2 < 1$].

$$15) \int \int (1 + \cot^2 \lambda \cdot \cos^2 2x) \frac{Tg x}{\sqrt{1-p^2} \cos^2 2x} \frac{dx}{x} = \pi F\{\sqrt{1-p^2}, \lambda\} - 2F'(p) \cdot T\{\sqrt{1-p^2}, \lambda\} - 2F'(p) \cdot \int \sin \lambda - \frac{\pi}{2} F'\{\sqrt{1-p^2}\} - F'(p) \cdot \int p - \{F'(p) - F'(p)\} [F\{\sqrt{1-p^2}, \lambda\}]^2 \text{ (VIII, 404).}$$

$$16) \int \int [1 - \{1 - (1-p^2) \sin^2 \lambda\} \cos^2 x] \frac{\sin x}{\sqrt{1-p^2} \cos^2 x} \frac{dx}{x} = \pi F\{\sqrt{1-p^2}, \lambda\} - 2F'(p) \cdot T\{\sqrt{1-p^2}, \lambda\} + \frac{1}{2} F'(p) \cdot \int \frac{1-p^2}{p^2} - \frac{\pi}{2} F'\{\sqrt{1-p^2}\} + \{F'(p) - E'(p)\} [F\{\sqrt{1-p^2}, \lambda\}]^2 \text{ (VIII, 404).}$$

$$17) \int \int [1 - \{1 - (1-p^2) \sin^2 \lambda\} \cos^2 x] \frac{Tg x}{\sqrt{1-p^2} \cos^2 x} \frac{dx}{x} = \pi F\{\sqrt{1-p^2}, \lambda\} - 2F'(p) \cdot T\{\sqrt{1-p^2}, \lambda\} + \frac{1}{2} F'(p) \cdot \int \frac{1-p^2}{p^2} - \frac{\pi}{2} F'\{\sqrt{1-p^2}\} + \{F'(p) - E'(p)\} [F\{\sqrt{1-p^2}, \lambda\}]^2 \text{ (VIII, 405).}$$

$$18) \int \int [1 - \{1 - (1-p^2) \sin^2 \lambda\} \cos^2 2x] \frac{Tg x}{\sqrt{1-p^2} \cos^2 2x} \frac{dx}{x} = \pi F\{\sqrt{1-p^2}, \lambda\} - 2F'(p) \cdot T\{\sqrt{1-p^2}, \lambda\} + \frac{1}{2} F'(p) \cdot \int \frac{1-p^2}{p^2} - \frac{\pi}{2} F'\{\sqrt{1-p^2}\} + \{F'(p) - E'(p)\} [F\{\sqrt{1-p^2}, \lambda\}]^2 \text{ (VIII, 405).}$$

$$19) \int \int \{\sin^2 x + \cos^2 x \cdot \sqrt{1-p^2}\} \frac{\sin x}{\sqrt{1-p^2} \cos^2 x} \frac{dx}{x} = \frac{1}{2} \int \left\{ \frac{2\sqrt{1-p^2}}{1+\sqrt{1-p^2}} \right\} \cdot F'(p) \text{ (VIII, 405).}$$

$$20) \int \int \{\sin^2 x + \cos^2 x \cdot \sqrt{1-p^2}\} \frac{Tg x}{\sqrt{1-p^2} \cos^2 x} \frac{dx}{x} = \frac{1}{2} \int \left\{ \frac{2\sqrt{1-p^2}}{1+\sqrt{1-p^2}} \right\} \cdot F'(p) \text{ (VIII, 405).}$$

$$21) \int \int \{\sin^2 2x + \cos^2 2x \cdot \sqrt{1-p^2}\} \frac{Tg x}{\sqrt{1-p^2} \cos^2 2x} \frac{dx}{x} = \frac{1}{2} \int \left\{ \frac{2\sqrt{1-p^2}}{1+\sqrt{1-p^2}} \right\} \cdot F'(p) \text{ (VIII, 405).}$$

F. Alg. rat. fract. à dén. x ;

Log. de fraction;

TABLE 416.

Lim. 0 et ∞ .

Circ. Directe.

$$1) \int \int \left(\frac{1 + \sin p x}{1 - \sin p x} \right) \frac{dx}{x} = \frac{1}{2} \pi^2 \text{ (VIII, 385*)} \quad 2) \int \int \left(\frac{1 + Tg p x}{1 - Tg p x} \right)^2 \frac{dx}{x} = \frac{1}{2} \pi^2 \text{ (VIII, 385*)}.$$

$$3) \int \int \left(\frac{1 + 2p \cos ax + p^2}{1 + 2p \cos bx + p^2} \right) \frac{dx}{x} = \int (1+p) \cdot \int \frac{b^2}{a^2} [p^2 \leq 1], = \int \frac{1+p}{p} \cdot \int \frac{b^2}{a^2} [p^2 \geq 1] \text{ (VIII, 279).}$$

F. Alg. rat. fract. à dén. x ;

Log. de fraction;

TABLE 416, suite.

Lim. 0 et ∞ .

Circ. Directe.

- 4) $\int \ln \left(\frac{1 + 2p \sin x + p^2}{1 - 2p \sin x + p^2} \right) \frac{dx}{x} = 2\pi \operatorname{Arctg} p$ Bronwin, Mathem. 1. 197.
- 5) $\int \ln \left(\frac{1 + q \sqrt{1 - p^2 \sin^2 x}}{1 - q \sqrt{1 - p^2 \sin^2 x}} \right) \frac{\sin x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = \pi F \{ \sqrt{1 - p^2}, \operatorname{Arcsin} q \}$ (VIII, 405).
- 6) $\int \ln \left(\frac{1 + q \sqrt{1 - p^2 \sin^2 x}}{1 - q \sqrt{1 - p^2 \sin^2 x}} \right) \frac{\operatorname{Tg} x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = \pi F \{ \sqrt{1 - p^2}, \operatorname{Arcsin} q \}$ (VIII, 405).
- 7) $\int \ln \left(\frac{1 + q \sqrt{1 - p^2 \sin^2 2x}}{1 - q \sqrt{1 - p^2 \sin^2 2x}} \right) \frac{\operatorname{Tg} x}{\sqrt{1 - p^2 \sin^2 2x}} \frac{dx}{x} = \pi F \{ \sqrt{1 - p^2}, \operatorname{Arcsin} q \}$ (VIII, 405).
- 8) $\int \ln \left(\frac{1 + q \sqrt{1 - p^2 \cos^2 x}}{1 - q \sqrt{1 - p^2 \cos^2 x}} \right) \frac{\sin x}{\sqrt{1 - p^2 \cos^2 x}} \frac{dx}{x} = \pi F \{ \sqrt{1 - p^2}, \operatorname{Arcsin} q \}$ (VIII, 406).
- 9) $\int \ln \left(\frac{1 + q \sqrt{1 - p^2 \cos^2 x}}{1 - q \sqrt{1 - p^2 \cos^2 x}} \right) \frac{\operatorname{Tg} x}{\sqrt{1 - p^2 \cos^2 x}} \frac{dx}{x} = \pi F \{ \sqrt{1 - p^2}, \operatorname{Arcsin} q \}$ (VIII, 406).
- 10) $\int \ln \left(\frac{1 + q \sqrt{1 - p^2 \cos^2 2x}}{1 - q \sqrt{1 - p^2 \cos^2 2x}} \right) \frac{\operatorname{Tg} x}{\sqrt{1 - p^2 \cos^2 2x}} \frac{dx}{x} = \pi F \{ \sqrt{1 - p^2}, \operatorname{Arcsin} q \}$ (VIII, 406).

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Logarithmique de

TABLE 417.

Lim. 0 et ∞ .

Circulaire Directe.

- 1) $\int \ln \sin^2 px \frac{dx}{q^2 + x^2} = \frac{\pi}{q} \ln \frac{1 - e^{-2pq}}{2}$ (VIII, 419).
- 2) $\int \ln \cos^2 px \frac{dx}{q^2 + x^2} = \frac{\pi}{q} \ln \frac{1 + e^{-2pq}}{2}$ (VIII, 419).
- 3) $\int \ln \operatorname{Tg}^2 px \frac{dx}{q^2 + x^2} = \frac{\pi}{q} \ln \frac{e^{2pq} - 1}{e^{2pq} + 1}$ (VIII, 419).
- 4) $\int \ln \operatorname{Cot}^2 px \frac{dx}{q^2 + x^2} = \frac{\pi}{q} \ln \frac{e^{2pq} + e^{-2pq}}{e^{2pq} - e^{-2pq}}$ V. T. 417, N. 1, 2.
- 5) $\int \ln \sin rx \cdot \operatorname{Tg} 2rx \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} \frac{1 - e^{-2qr}}{1 + e^{-2qr}} \ln \frac{2}{1 - e^{-2qr}}$ (H, 151).
- 6) $\int \ln \sin rx \cdot \operatorname{Cot} 2rx \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} \frac{1 + e^{-2qr}}{1 - e^{-2qr}} \ln \frac{1 - e^{-2qr}}{2}$ (H, 151).

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Logarithmique de
Circulaire Directe.

TABLE 417, suite.

Lim. 0 et ∞ .

- $$7) \int \frac{l \sin r x}{\sin 2 r x} \frac{x dx}{q^2 + x^2} = \frac{\pi}{e^{2qr} - e^{-2qr}} l \frac{1 - e^{-2qr}}{2} \quad (\text{H, 151}).$$
- $$8) \int l \left(\frac{1}{2} \sin r x \right) . \text{Tgr} r x \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} \frac{1 - e^{-2qr}}{1 + e^{-2qr}} l \frac{4}{1 - e^{-2qr}} \quad (\text{H, 152}).$$
- $$9) \int l \left(\frac{1}{2} \sin r x \right) . \text{Cot} r x \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} \frac{1 + e^{-2qr}}{1 - e^{-2qr}} l \frac{1 - e^{-2qr}}{4} \quad (\text{H, 152}).$$
- $$10) \int \frac{l \left(\frac{1}{2} \sin r x \right)}{\sin r x} \frac{x dx}{q^2 + x^2} = \frac{\pi}{e^{qr} - e^{-qr}} l \frac{1 - e^{-2qr}}{4} \quad (\text{H, 152}).$$
- $$11) \int l \cos r x . \text{Tg} 2 r x \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} \frac{1 - e^{-4qr}}{1 + e^{-4qr}} l \frac{2}{1 + e^{-2qr}} \quad (\text{H, 151}).$$
- $$12) \int l \cos r x . \text{Cot} 2 r x \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} \frac{1 + e^{-4qr}}{1 - e^{-4qr}} l \frac{1 + e^{-2qr}}{2} \quad (\text{H, 151}).$$
- $$13) \int \frac{l \cos r x}{\sin 2 r x} \frac{x dx}{q^2 + x^2} = \frac{\pi}{e^{2qr} - e^{-2qr}} l \frac{1 + e^{-2qr}}{2} \quad (\text{H, 151}).$$
- $$14) \int \text{Tgr} x . \text{Tg} 2 r x \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} \frac{1 - e^{-4qr}}{1 + e^{-4qr}} l \frac{e^{qr} + e^{-qr}}{e^{qr} - e^{-qr}} \quad (\text{H, 152}).$$
- $$15) \int l \text{Tgr} x . \text{Cot} 2 r x \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} \frac{1 + e^{-4qr}}{1 - e^{-4qr}} l \frac{e^{qr} - e^{-qr}}{e^{qr} + e^{-qr}} \quad (\text{H, 152}).$$
- $$16) \int \frac{l \text{Tgr} x}{\sin 2 r x} \frac{x dx}{q^2 + x^2} = \frac{\pi}{e^{2qr} - e^{-2qr}} l \frac{e^{qr} - e^{-qr}}{e^{qr} + e^{-qr}} \quad (\text{H, 152}).$$

F. Alg. rat. fract à dén. $q^2 - x^2$;

Logarithmique de
Circulaire Directe.

TABLE 418.

Lim. 0 et ∞ .

- $$1) \int l \sin^2 p x \frac{dx}{q^2 - x^2} = -\frac{1}{2q} \pi^2 + p \pi \quad (\text{VIII, 509}). \quad 2) \int l \cos^2 p x \frac{dx}{q^2 - x^2} = p \pi \quad (\text{VIII, 509}).$$
- $$3) \int l \text{Tg}^2 p x \frac{dx}{q^2 - x^2} = -\frac{1}{2q} \pi^2 \quad (\text{VIII, 509}).$$
- $$4) \int l \sin r x . \text{Tg} 2 r x \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \left(q r - \frac{1}{2} \pi \right) \text{Tg} 2 q r \quad (\text{H, 152}).$$
- $$5) \int l \sin r x . \text{Cot} 2 r x \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \left(q r - \frac{1}{2} \pi \right) \text{Cot} 2 q r \quad (\text{H, 152}).$$

F. Alg. rat. fract. à dén. $q^2 - x^2$;

Logarithmique de
Circulaire Directe.

TABLE 418, suite.

Lim. 0 et ∞ .

- 6) $\int \frac{l \sin rx}{\sin 2rx} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \frac{qr - \frac{1}{2}\pi}{\sin 2qr} \text{ (H, 152).}$
- 7) $\int l \left(\frac{1}{2} \sin rx \right) \cdot \text{Tgr} x \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \left(qr - \frac{1}{2}\pi \right) \text{Tg} qr \text{ (H, 152).}$
- 8) $\int l \left(\frac{1}{2} \sin rx \right) \cdot \text{Cot} rx \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \left(qr - \frac{1}{2}\pi \right) \text{Cot} qr \text{ (H, 152).}$
- 9) $\int \frac{l \left(\frac{1}{2} \sin rx \right)}{\sin rx} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \frac{qr - \frac{1}{2}\pi}{\sin qr} \text{ (H, 153).}$
- 10) $\int l \cos rx \cdot \text{Tg} 2rx \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} qr \text{Tg} 2qr \text{ (H, 151).}$
- 11) $\int l \cos rx \cdot \text{Cot} 2rx \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} qr \text{Cot} 2qr \text{ (H, 151).}$
- 12) $\int \frac{l \cos rx}{\sin 2rx} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \frac{qr}{\sin 2qr} \text{ (H, 151).}$
- 13) $\int l \text{Tgr} x \cdot \text{Tg} 2rx \frac{x dx}{q^2 - x^2} = -\frac{1}{4} \pi^2 \text{Tg} 2qr \text{ (H, 152).}$
- 14) $\int l \text{Tgr} x \cdot \text{Cot} 2rx \frac{x dx}{q^2 - x^2} = -\frac{1}{4} \pi^2 \text{Cot} 2qr \text{ (H, 152).}$
- 15) $\int \frac{l \text{Tgr} x}{\sin 2rx} \frac{x dx}{q^2 - x^2} = -\frac{1}{4} \pi^2 \text{Cosec} 2qr \text{ (H, 152).}$

F. Alg. rat. fract. à dén. $q^4 \pm x^4$;

Logarithmique de
Circulaire Directe.

TABLE 419.

Lim. 0 et ∞ .

- 1) $\int l \sin px \frac{dx}{q^4 + x^4} = \frac{\pi}{2q^3 \sqrt{2}} l \left\{ \frac{1}{2} \sqrt{1 - 2e^{-pq\sqrt{2}}} \cos(pq\sqrt{2}) + e^{-2pq\sqrt{2}} \right\} -$
 $-\frac{\pi}{2q^3 \sqrt{2}} \text{Arcsin} \left\{ \frac{e^{-pq\sqrt{2}} \sin(pq\sqrt{2})}{\sqrt{1 - 2e^{-pq\sqrt{2}}} \cos(pq\sqrt{2}) + e^{-2pq\sqrt{2}}} \right\} \text{ (IV, 537).}$
- 2) $\int l \cos px \frac{dx}{q^4 + x^4} = \frac{\pi}{8q^3 \sqrt{2}} l \left\{ \frac{1}{2} \sqrt{1 + 2e^{-pq\sqrt{2}}} \cos(pq\sqrt{2}) + e^{-2pq\sqrt{2}} \right\} +$
 $+\frac{\pi}{2q^3 \sqrt{2}} \text{Arcsin} \left\{ \frac{e^{-pq\sqrt{2}} \sin(pq\sqrt{2})}{\sqrt{1 + 2e^{-pq\sqrt{2}}} \cos(pq\sqrt{2}) + e^{-2pq\sqrt{2}}} \right\} \text{ (IV, 537).}$

$$3) \int l Tg p x \frac{dx}{q^4 + x^4} = \frac{\pi}{4q^3 \sqrt{2}} l \frac{1 - 2e^{-pq\sqrt{2}} \cos(pq\sqrt{2}) + e^{-2pq\sqrt{2}}}{1 + 2e^{-pq\sqrt{2}} \cos(pq\sqrt{2}) + e^{-2pq\sqrt{2}}} - \\ - \frac{\pi}{2q^3 \sqrt{2}} \operatorname{Arcsin} \left\{ \frac{2e^{-pq\sqrt{2}} \sin(pq\sqrt{2})}{\sqrt{1 - 2e^{-pq\sqrt{2}} \cos(pq\sqrt{2}) + e^{-2pq\sqrt{2}}}} \right\} \text{ V. T. 419, N. 1, 2.}$$

$$4) \int l \operatorname{Sin} r x \frac{dx}{4q^4 + x^4} = \frac{\pi}{8q^3} \left\{ \frac{1}{2} l \frac{1 - 2e^{-2qr} \cos 2qr + e^{-4qr}}{2} - \operatorname{Arctg} \frac{\sin 2qr}{e^{2qr} - \cos 2qr} \right\} \text{ (H, 62).}$$

$$5) \int l \operatorname{Sin} r x \frac{x^2 dx}{4q^4 + x^4} = \frac{\pi}{4q} \left\{ \frac{1}{2} l \frac{1 - 2e^{-2qr} \cos 2qr + e^{-4qr}}{2} + \operatorname{Arctg} \frac{\sin 2qr}{e^{2qr} - \cos 2qr} \right\} \text{ (H, 62).}$$

$$6) \int l \operatorname{Cos} r x \frac{dx}{4q^4 + x^4} = \frac{\pi}{8q^3} \left\{ \frac{1}{2} l \frac{1 + 2e^{-2qr} \cos 2qr + e^{-4qr}}{2} + \operatorname{Arctg} \frac{\sin 2qr}{e^{2qr} + \cos 2qr} \right\} \text{ (H, 60).}$$

$$7) \int l \operatorname{Cos} r x \frac{x^2 dx}{4q^4 + x^4} = \frac{\pi}{4q} \left\{ \frac{1}{2} l \frac{1 + 2e^{-2qr} \cos 2qr + e^{-4qr}}{2} - \operatorname{Arctg} \frac{\sin 2qr}{e^{2qr} + \cos 2qr} \right\} \text{ (H, 60).}$$

$$8) \int l Tg r x \frac{dx}{4q^4 + x^4} = \frac{\pi}{8q^3} \left\{ \frac{1}{2} l \frac{e^{2qr} - 2 \cos 2qr + e^{-2qr}}{e^{2qr} + 2 \cos 2qr + e^{-2qr}} + \operatorname{Arctg} \frac{2 \sin 2qr}{e^{2qr} - e^{-2qr}} \right\} \text{ (H, 62).}$$

$$9) \int l Tg r x \frac{dx}{4q^4 + x^4} = \frac{\pi}{4q} \left\{ \frac{1}{2} l \frac{e^{2qr} - 2 \cos 2qr + e^{-2qr}}{e^{2qr} + 2 \cos 2qr + e^{-2qr}} - \operatorname{Arctg} \frac{2 \sin 2qr}{e^{2qr} - e^{-2qr}} \right\} \text{ (H, 62).}$$

$$10) \int l \operatorname{Sin} r x \frac{dx}{q^4 - x^4} = \frac{\pi}{4q^3} \left(qr - \frac{1}{2} \pi + l \frac{1 - e^{-2qr}}{2} \right) \text{ (H, 111).}$$

$$11) \int l \operatorname{Sin} r x \frac{x^2 dx}{q^4 - x^4} = \frac{\pi}{4q} \left(qr - \frac{1}{2} \pi - l \frac{1 - e^{-2qr}}{2} \right) \text{ (H, 111).}$$

$$12) \int l \operatorname{Cos} r x \frac{dx}{q^4 - x^4} = \frac{\pi}{4q^3} \left(l \frac{1 + e^{-2qr}}{2} + qr \right) \text{ (H, 110).}$$

$$13) \int l \operatorname{Cos} r x \frac{x^2 dx}{q^4 - x^4} = \frac{\pi}{4q} \left(qr - l \frac{1 + e^{-2qr}}{2} \right) \text{ (H, 110).}$$

$$14) \int l Tg r x \frac{dx}{q^4 - x^4} = \frac{\pi}{4q^3} \left(l \frac{e^{qr} - e^{-qr}}{e^{qr} + e^{-qr}} - \frac{1}{2} \pi \right) \text{ (H, 111).}$$

$$15) \int l Tg r x \frac{x^2 dx}{q^4 - x^4} = \frac{\pi}{4q} \left(l \frac{e^{qr} + e^{-qr}}{e^{qr} - e^{-qr}} - \frac{1}{2} \pi \right) \text{ (H, 111).}$$

F. Alg. rat. fract. à autre dén. bin.;

Logarithmique de

TABLE 420.

Lim. 0 et ∞ .

Circulaire Directe monôme.

$$\begin{aligned}
 1) \int l \sin r x \frac{dx}{(q^2 - x^2)^2} &= \frac{\pi}{8q^2} (4qr - \pi) \text{ (H, 111).} & 2) \int l \sin r x \frac{x^2 dx}{(q^2 - x^2)^2} &= \frac{\pi^2}{8q} \text{ (H, 111).} \\
 3) \int l \cos r x \frac{dx}{(q^2 - x^2)^2} &= 0 \text{ (H, 110).} & 4) \int l \cos r x \frac{x^2 dx}{(q^2 - x^2)^2} &= -\frac{1}{2} \pi r \text{ (H, 111).} \\
 5) \int l \operatorname{Tgr} x \frac{dx}{(q^2 - x^2)^2} &= \frac{\pi}{8q^2} (4qr - \pi) \text{ (H, 111).} & 6) \int l \operatorname{Tgr} x \frac{dx}{(q^2 - x^2)^2} &= \frac{\pi}{8q} (\pi + 4qr) \text{ (H, 111).}
 \end{aligned}$$

F. Alg. rat. fract. à dén. binôme;

Logarithmique de

TABLE 421.

Lim. 0 et ∞ .

Circulaire Directe polynôme.

$$\begin{aligned}
 1) \int l(1 + p^2 \operatorname{Tgr}^2 r x) \frac{dx}{q^2 + x^2} &= \frac{\pi}{q} l \left(1 + p \frac{e^{qr} - e^{-qr}}{e^{qr} + e^{-qr}} \right) \text{ (VIII, 418*).} \\
 2) \int l(1 + p^2 \operatorname{Cot}^2 r x) \frac{dx}{q^2 + x^2} &= \frac{\pi}{q} l \left(1 + p \frac{e^{qr} + e^{-qr}}{e^{qr} - e^{-qr}} \right) \text{ (VIII, 418*).} \\
 3) \int l(1 + p^2 \operatorname{Tgr}^2 r x) \frac{\operatorname{Cot} r x}{q^2 + x^2} dx &= \frac{\pi}{q} \left\{ \frac{e^{qr} + e^{-qr}}{2} l \left(1 + p \frac{e^{qr} - e^{-qr}}{e^{qr} + e^{-qr}} \right) - \frac{e^{qr} - e^{-qr}}{2} l(1 + p) \right\} \\
 &\quad \text{(VIII, 419*).} \\
 4) \int l(1 + p^2 \operatorname{Tgr}^2 r x) \frac{x \operatorname{Cot} r x}{q^2 + x^2} dx &= \pi \left\{ \frac{e^{qr} + e^{-qr}}{e^{qr} - e^{-qr}} l \left(1 + p \frac{e^{qr} - e^{-qr}}{e^{qr} + e^{-qr}} \right) - l(1 + p) \right\} \text{ (VIII, 419*).} \\
 5) \int l(1 + p^2 \operatorname{Tgr}^2 r x) \frac{x}{\sin r x} \frac{dx}{q^2 + x^2} &= \frac{2\pi}{e^{qr} - e^{-qr}} l \left(1 + p \frac{e^{qr} - e^{-qr}}{e^{qr} + e^{-qr}} \right) \text{ (VIII, 419*).} \\
 6) \int l(1 + p^2 \operatorname{Cot}^2 r x) \frac{x}{\sin r x} \frac{dx}{q^2 + x^2} &= \frac{2\pi}{e^{qr} - e^{-qr}} l \left(1 + p \frac{e^{qr} + e^{-qr}}{e^{qr} - e^{-qr}} \right) \text{ (VIII, 419*).} \\
 7) \int l(1 + p^2 \operatorname{Tgr}^2 r x) \frac{1}{\cos r x} \frac{dx}{q^2 + x^2} &= \frac{\pi}{q} \frac{2}{e^{qr} + e^{-qr}} l \left(1 + p \frac{e^{qr} - e^{-qr}}{e^{qr} + e^{-qr}} \right) \text{ (VIII, 419*).} \\
 8) \int l(1 + p^2 \operatorname{Cot}^2 r x) \frac{1}{\cos r x} \frac{dx}{q^2 + x^2} &= \frac{\pi}{q} \frac{2}{e^{qr} + e^{-qr}} l \left(1 + p \frac{e^{qr} + e^{-qr}}{e^{qr} - e^{-qr}} \right) \text{ (VIII, 419*).} \\
 9) \int l \{ 2(1 + \cos p x) \} \frac{dx}{q^2 - x^2} &= \frac{1}{2} \pi \text{ (VIII, 508).}
 \end{aligned}$$

$$10) \int l\{2(1 - \cos px)\} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} (pq - \pi) \text{ (VIII, 508).}$$

$$11) \int l(1 \pm 2p \cos sx + p^2) \frac{dx}{q^2 + x^2} = \frac{\pi}{q} l(p \pm e^{-qs}) [p^2 > 1], = \frac{\pi}{q} l(1 \pm p e^{-qs}) [p^2 < 1] \text{ (VIII, 584)}$$

$$12) \int l(1 + 2r \cos sx + r^2) \cdot \sin px \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} (e^{-pq} - e^{pq}) l(1 + r e^{-qs}) - \frac{\pi}{2} e^{pq} \sum_1^d \frac{(-r)^n}{n} e^{-nqs} - \\ - \frac{\pi}{2} e^{-pq} \sum_1^d \frac{(-r)^n}{n} e^{nqs} \left[\frac{p}{s} \text{ fractionn.} \right], = \frac{\pi}{2} (e^{-pq} - e^{pq}) l(1 + r e^{-qs}) - \\ - \frac{\pi}{2} e^{pq} \sum_1^{a-1} \frac{(-r)^n}{n} e^{-nqs} - \frac{\pi}{2} e^{-pq} \sum_1^d \frac{(-r)^n}{n} e^{nqs} \left[\frac{p}{s} \text{ entier} \right] \text{ (VIII, 498)}$$

$$13) \int l(1 + 2r \cos sx + r^2) \cdot \cos px \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} (e^{pq} + e^{-pq}) l(1 + r e^{-qs}) + \\ + \frac{\pi}{2q} e^{pq} \sum_1^d \frac{(-r)^n}{n} e^{-nqs} - \frac{\pi}{2q} e^{-pq} \sum_1^d \frac{(-r)^n}{n} e^{nqs} \text{ (VIII, 498)}$$

$$14) \int l(1 + 2r \cos sx + r^2) \frac{dx}{q^2 - x^2} = \frac{\pi}{q} \operatorname{Arctg} \frac{r \sin qs}{1 + r \cos qs} \text{ (VIII, 508).}$$

$$15) \int l(1 + 2r \cos sx + r^2) \cdot \sin px \frac{x dx}{q^2 - x^2} = \pi \sin pq \cdot \operatorname{Arctg} \left(\frac{r \sin qs}{1 + r \cos qs} \right) + \\ + \pi \sum_1^d \frac{(-r)^n}{n} \cos \{(p - ns)q\} \left[\frac{p}{s} \text{ fractionn.} \right], = \pi \sin pq \cdot \operatorname{Arctg} \left(\frac{r \sin qs}{1 + r \cos qs} \right) + \\ + \frac{\pi}{2d} (-r)^d + \pi \sum_1^d \frac{(-r)^n}{n} \cos \{(p - ns)q\} \left[\frac{p}{s} \text{ entier} \right] \text{ (VIII, 509).}$$

Dans 12) à 15) on a $d = \mathcal{E}_s^p$.

$$16) \int l(1 + 2r \cos sx + r^2) \cdot \cos px \frac{dx}{q^2 - x^2} = \frac{\pi}{q} \cos pq \cdot \operatorname{Arctg} \left(\frac{r \sin qs}{1 + r \cos qs} \right) - \\ - \frac{\pi}{q} \sum_1^d \frac{(-r)^n}{n} \sin \{(p - ns)q\} \text{ (VIII, 509)}$$

$$17) \int l(1 + 2r \cos sx + r^2) \cdot \sin^{2a+1} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1}} (e^q - e^{-q})^{2a+1} l(1 + r e^{-qs}) [s > 2a+1], = \\ = \frac{(-1)^{a-1} \pi}{2^{2a+1}} \{ (e^q - e^{-q})^{2a+1} l(1 + r e^{-qs}) + r \} [s = 2a+1] \text{ (V, 110).}$$

$$18) \int l(1 + 2r \cos sx + r^2) \cdot \cos^a x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^a q} (e^q + e^{-q})^a l(1 + r e^{-qs}) [s \geq a] \text{ (V, 110).}$$

$$19) \int l(1 + 2r \cos sx + r^2) \cdot \sin^{2a} x \cdot \sin px \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1}} (e^q - e^{-q})^{2a} (e^{pq} - e^{-pq})$$

$$l(1 + re^{-qs}) \left[\begin{array}{l} 2p > 4a < s \\ \text{ou } 4a > 2p < s \end{array} \right], = \frac{(-1)^{a-1} \pi}{2^{2a+1}} \{ (e^q - e^{-q})^{2a} (e^{pq} - e^{-pq}) l(1 + re^{-qs}) - r \}$$

$$\left[\begin{array}{l} p = s - 2a \text{ et } 2p > s > 4a \\ \text{ou } 2p < s < 4a \end{array} \right] \quad (\text{V, 110}).$$

$$20) \int l(1 + 2r \cos sx + r^2) \cdot \sin^{2a+1} x \cdot \cos px \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+2}} (e^q - e^{-q})^{2a+1} (e^{pq} + e^{-pq})$$

$$l(1 + re^{-qs}) \left[\begin{array}{l} 2p > 4a + 2 < s \\ \text{ou } 4a + 2 > 2p < s \end{array} \right], = \frac{(-1)^{a-1} \pi}{2^{2a+2}} \{ (e^q - e^{-q})^{2a+1} (e^{pq} + e^{-pq}) l(1 + re^{-qs}) - r \}$$

$$\left[\begin{array}{l} p = s - 2a - 1 \text{ et } 2p > s > 4a + 2 \\ \text{ou } 2p < s < 4a + 2 \end{array} \right] \quad (\text{V, 110}).$$

$$21) \int l(1 + 2r \cos sx + r^2) \cdot \cos^a x \cdot \cos px \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{a+1} q} (e^q + e^{-q})^a (e^{pq} + e^{-pq}) l(1 + re^{-qs})$$

$$\left[\begin{array}{l} 2p \geq 2a \leq s \\ \text{ou } 2a \geq 2p \leq s \end{array} \right] \quad (\text{V, 110}).$$

$$22) \int l(1 + 2r \cos sx + r^2) \frac{dx}{(q^2 + x^2)^2} = \frac{\pi}{2q^3} l(1 + re^{-qs}) + \frac{\pi}{2q^3} \frac{re^{-qs}}{1 + re^{-qs}} \quad (\text{IV, 539}).$$

$$23) \int l(1 + 2r \cos sx + r^2) \frac{dx}{1 + x^{2a}} = \frac{\pi}{a} l(1 + re^{-s}) - \frac{\pi}{a} \frac{1}{\sum_1^{a-1}} \cos \frac{n\pi}{a} \cdot l \left\{ 1 + 2re^{-s \cos \frac{n\pi}{a}} \right.$$

$$\left. \cos \left(s \sin \frac{n\pi}{a} \right) + r^2 e^{-2s \cos \frac{n\pi}{a}} \right\} - \frac{2\pi}{a} \frac{1}{\sum_1^{a-1}} \sin \frac{n\pi}{a} \cdot$$

$$\text{Arcsin} \left\{ \frac{re^{-s \cos \frac{n\pi}{a}} \sin \left(s \sin \frac{n\pi}{a} \right)}{\sqrt{\left\{ 1 + 2re^{-s \cos \frac{n\pi}{a}} \cos \left(s \sin \frac{n\pi}{a} \right) + r^2 e^{-2s \cos \frac{n\pi}{a}} \right\}}} \right\} \left[\begin{array}{c} a \\ \text{impair} \end{array} \right], =$$

$$= \frac{\pi}{a} \frac{1}{\sum_0^{a-1}} \cos \left(\frac{2n+1}{2a} \pi \right) \cdot l \left\{ 1 + 2re^{-s \cos \left(\frac{2n+1}{2a} \pi \right)} \cos \left\{ s \sin \left(\frac{2n+1}{2a} \pi \right) \right\} + \right.$$

$$\left. + r^2 e^{-2s \cos \left(\frac{2n+1}{2a} \pi \right)} \right\} + \frac{2\pi}{a} \frac{1}{\sum_0^{a-1}} \sin \left(\frac{2n+1}{2a} \pi \right) \cdot$$

$$\text{Arcsin} \left\{ \frac{re^{-s \cos \left(\frac{2n+1}{2a} \pi \right)} \sin \left\{ s \sin \left(\frac{2n+1}{2a} \pi \right) \right\}}{\sqrt{\left\{ 1 + 2re^{-s \cos \left(\frac{2n+1}{2a} \pi \right)} \cos \left\{ s \sin \left(\frac{2n+1}{2a} \pi \right) \right\} + r^2 e^{-2s \cos \left(\frac{2n+1}{2a} \pi \right)} \right\}}} \right\}$$

$$\left[\begin{array}{c} a \\ \text{pair} \end{array} \right] \quad (\text{IV, 538}). \text{ Partout on a } [r^2 < 1].$$

$$1) \int l(rx) \cdot \sin px \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} e^{-pq} \{2l(qr) - Ei(pq)\} - \frac{\pi}{4} e^{pq} Ei(-pq) \text{ (VIII, 456).}$$

$$2) \int l(rx) \cdot \cos px \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} e^{-pq} \{2l(qr) - Ei(pq)\} + \frac{\pi}{4q} e^{pq} Ei(-pq) \text{ (VIII, 456).}$$

$$3) \int l\left(\frac{r}{x}\right) \cdot \sin px \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} \{e^{-pq} Ei(pq) + e^{pq} Ei(-pq)\} + \frac{\pi}{2} e^{-pq} l\frac{r}{q} \text{ (IV, 537*)}.$$

$$4) \int l\left(\frac{r}{x}\right) \cdot \cos px \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} \{e^{-pq} Ei(pq) - e^{pq} Ei(-pq)\} + \frac{\pi}{2q} e^{-pq} l\frac{r}{q} \text{ (IV, 537*)}.$$

$$5) \int l(rx) \cdot \sin px \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \left\{ \frac{\pi}{2} \sin pq - Ci(pq) \cdot \cos pq - Si(pq) \cdot \sin pq + \cos pq \cdot l(qr) \right\}$$

V. T. 422, N. 7 & T. 161, N. 4.

$$6) \int l(rx) \cdot \cos px \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \left\{ \frac{\pi}{2} \cos pq + Ci(pq) \cdot \sin pq - Si(pq) \cdot \cos pq + \sin pq \cdot l(qr) \right\}$$

V. T. 161, N. 4 & T. 422, N. 8.

$$7) \int l\left(\frac{r}{x}\right) \cdot \sin px \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \left\{ Ci(pq) \cdot \cos pq + Si(pq) \cdot \sin pq - \frac{\pi}{2} \sin pq + \cos pq \cdot l\frac{r}{q} \right\}$$

(IV, 537*).

$$8) \int l\left(\frac{r}{x}\right) \cdot \cos px \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \left\{ Si(pq) \cdot \cos pq - Ci(pq) \cdot \sin pq - \frac{\pi}{2} \cos pq + \sin pq \cdot l\frac{r}{q} \right\}$$

(IV, 537*).

$$9) \int l(rx) \cdot \sin px \frac{x dx}{q^4 - x^4} = \frac{\pi}{8q^3} \{ \pi \sin pq - 2 Si(pq) \cdot \sin pq - 2 Ci(pq) \cdot \cos pq - e^{-pq} Ei(pq) - \\ - e^{pq} Ei(-pq) + (e^{-pq} - \cos pq) 2 l(qr) \} \text{ V. T. 422, N. 1, 5.}$$

$$10) \int l(rx) \cdot \sin px \frac{x^3 dx}{q^4 - x^4} = \frac{\pi}{8} \{ \pi \sin pq - 2 Si(pq) \cdot \sin pq - 2 Ci(pq) \cdot \cos pq + e^{-pq} Ei(pq) + \\ + e^{pq} Ei(-pq) - (e^{-pq} + \cos pq) 2 l(qr) \} \text{ V. T. 422, N. 1, 5.}$$

$$11) \int l(rx) \cdot \cos px \frac{dx}{q^4 - x^4} = \frac{\pi}{8q^3} \{ \pi \cos pq - 2 Si(pq) \cdot \cos pq + 2 Ci(pq) \cdot \sin pq - e^{-pq} Ei(pq) + \\ + e^{pq} Ei(-pq) + (e^{-pq} + \sin pq) 2 l(qr) \} \text{ V. T. 422, N. 2, 6,}$$

$$12) \int l(rx) \cdot \cos px \frac{x^3 dx}{q^4 - x^4} = \frac{\pi}{8q} \{ \pi \cos pq - 2 Si(pq) \cdot \cos pq + 2 Ci(pq) \cdot \sin pq + e^{-pq} Ei(pq) - \\ - e^{pq} Ei(-pq) - (e^{-pq} - \sin pq) 2 l(qr) \} \text{ V. T. 422, N. 2, 6.}$$

F. Alg. rat. fract.;

Logarithmique;

Circulaire Directe.

Autre forme. TABLE 423.

Lim. 0 et ∞ .

$$1) \int \frac{l \sin r x}{x^4 + 2 p^2 x^2 \cos 2 \lambda + p^4} dx = \frac{\pi}{8 p^3} \sec \lambda . l \left\{ \frac{1 - 2 e^{-2 p r \cos \lambda} \cos (2 p r \sin \lambda) + e^{-4 p r \cos \lambda}}{4} \right\} - \\ - \frac{\pi}{4 p^3} \operatorname{Cosec} \lambda . \operatorname{Arcsin} \left\{ \frac{e^{-2 p r \cos \lambda} \sin (2 p r \sin \lambda)}{\sqrt{1 - 2 e^{-2 p r \cos \lambda} \cos (2 p r \sin \lambda) + e^{-4 p r \cos \lambda}}} \right\} \quad (\text{IV, 539}).$$

$$2) \int \frac{l \cos r x}{x^4 + 2 p^2 x^2 \cos 2 \lambda + p^4} dx = \frac{\pi}{8 p^3} \sec \lambda . l \left\{ \frac{1 + 2 e^{-2 p r \cos \lambda} \cos (2 p r \sin \lambda) + e^{-4 p r \cos \lambda}}{4} \right\} + \\ + \frac{\pi}{4 p^3} \operatorname{Cosec} \lambda . \operatorname{Arcsin} \left\{ \frac{e^{-2 p r \cos \lambda} \sin (2 p r \sin \lambda)}{\sqrt{1 + 2 e^{-2 p r \cos \lambda} \cos (2 p r \sin \lambda) + e^{-4 p r \cos \lambda}}} \right\} \quad (\text{IV, 539}).$$

$$3) \int \frac{l \operatorname{Tgr} x}{x^4 + 2 p^2 x^2 \cos 2 \lambda + p^4} dx = \frac{\pi}{8 p^3} \sec \lambda . l \left\{ \frac{1 - 2 e^{-2 p r \cos \lambda} \cos (2 p r \sin \lambda) + e^{-4 p r \cos \lambda}}{1 + 2 e^{-2 p r \cos \lambda} \cos (2 p r \sin \lambda) + e^{-4 p r \cos \lambda}} \right\} - \\ - \frac{\pi}{4 p^3} \operatorname{Cosec} \lambda . \operatorname{Arcsin} \left\{ \frac{2 e^{-2 p r \cos \lambda} \sin (2 p r \sin \lambda)}{\sqrt{1 - 2 e^{-2 p r \cos \lambda} \cos (2 p r \sin \lambda) + e^{-4 p r \cos \lambda}}} \right\} \quad \text{V. T. 423, N. 1, 2.}$$

$$4) \int l(1 + 2 q \cos r x + q^2) \frac{dx}{x^4 + 2 p^2 x^2 \cos 2 \lambda + p^4} = \frac{\pi}{4 p^3} \sec \lambda . l \{ 1 + 2 q e^{-p r \cos \lambda} \cos (p r \sin \lambda) + \\ + q^2 e^{-2 p r \cos \lambda} \} + \frac{\pi}{2 p^3} \operatorname{Cosec} \lambda . \operatorname{Arcsin} \frac{q e^{-p r \cos \lambda} \sin (p r \sin \lambda)}{\sqrt{1 + 2 q e^{-p r \cos \lambda} \cos (p r \sin \lambda) + q^2 e^{-2 p r \cos \lambda}}} [q^2 < 1], = \\ = \frac{\pi}{4 p^3} \sec \lambda . l \{ q^2 + 2 q e^{-p r \cos \lambda} \cos (p r \sin \lambda) + e^{-2 p r \cos \lambda} \} + \frac{\pi}{2 p^3} \operatorname{Cosec} \lambda . \\ \operatorname{Arcsin} \frac{e^{-p r \cos \lambda} \sin (p r \sin \lambda)}{\sqrt{q^2 + 2 q e^{-p r \cos \lambda} \cos (p r \sin \lambda) + e^{-2 p r \cos \lambda}}} [q^2 > 1] \quad (\text{IV, 540}).$$

$$5) \int \frac{x^p \sin (q l x)}{1 + 2 x \cos \lambda + x^2} dx = \frac{\pi}{\sin \lambda} \frac{\{ e^{q(\pi + \lambda)} - e^{-q(\pi + \lambda)} \} \sin \{ p(\pi - \lambda) \}}{e^{\frac{1}{2} q \pi} - e^{-\frac{1}{2} q \pi}} - \\ - \frac{\{ e^{q(\pi - \lambda)} - e^{-q(\pi - \lambda)} \} \sin \{ p(\pi + \lambda) \}}{e^{\frac{1}{2} q \pi} - e^{-\frac{1}{2} q \pi}}$$

$$6) \int \frac{x^p \cos (q l x)}{1 + 2 x \cos \lambda + x^2} dx = \frac{\pi}{\sin \lambda} \frac{\{ e^{q(\pi + \lambda)} + e^{-q(\pi + \lambda)} \} \cos \{ p(\pi - \lambda) \}}{e^{\frac{1}{2} q \pi} - e^{-\frac{1}{2} q \pi}} - \\ - \frac{\{ e^{q(\pi - \lambda)} + e^{-q(\pi - \lambda)} \} \cos \{ p(\pi + \lambda) \}}{e^{\frac{1}{2} q \pi} - e^{-\frac{1}{2} q \pi}}$$

Sur 5) et 6) voyez Cauchy, A. M. 17, 84.

$$7) \int \frac{\cos (q l x)}{x^p - 2 \cos \lambda + x^{-p}} \frac{dx}{x} = \frac{\pi}{p \sin \lambda} \frac{e^{\frac{q}{p}(\lambda - \pi)} - e^{\frac{q}{p}(\pi - \lambda)}}{e^{-\frac{q}{p} \pi} - e^{\frac{q}{p} \pi}} \quad (\text{IV, 540}).$$

F. Alg. rat. fract.;
Logarithmique;
Circulaire Directe.

Autre forme. TABLE 423, suite.

Lim. 0 et ∞ .

$$8) \int \frac{l \sin rx}{1-2p \cos 2rx+p^2} \frac{dx}{q^2+x^2} = \frac{\pi}{2q(1-pe^{-2qr})(1-pe^{2qr})} \left\{ l \frac{1-e^{-2qr}}{2} - \right. \\ \left. - \frac{p}{1-p^2} (e^{2qr}-e^{-2qr}) l(1-p) \right\} \quad (\text{H, 151}).$$

$$9) \int \frac{l \sin rx}{1-2p \cos 2rx+p^2} \frac{dx}{q^2-x^2} = \frac{\pi}{2q(1-2p \cos 2qr+p^2)} \left\{ \frac{2p}{1-p^2} \sin 2qr. l(1-p) + qr - \frac{1}{2}\pi \right\} \\ (\text{H, 151}).$$

$$10) \int \frac{l(\frac{1}{2} \sin rx)}{1-2p \cos rx+p^2} \frac{dx}{q^2+x^2} = \frac{\pi}{2q(1-pe^{-qr})(1-pe^{qr})} \left\{ l \frac{1-e^{-qr}}{4} - \right. \\ \left. - \frac{p}{1-p^2} (e^{qr}-e^{-qr}) l(1-p^2) \right\} \quad (\text{H, 152}).$$

$$11) \int \frac{l(\frac{1}{2} \sin rx)}{1-2p \cos rx+p^2} \frac{dx}{q^2-x^2} = \frac{\pi}{2q(1-2p \cos qr+p^2)} \left\{ \frac{2p}{1-p^2} \sin qr. l(1-p^2) + qr - \frac{1}{2}\pi \right\} \\ (\text{H, 153}).$$

$$12) \int \frac{l \cos rx}{1-2p \cos 2rx+p^2} \frac{dx}{q^2+x^2} = \frac{\pi}{2q(1-pe^{-qr})(1-pe^{qr})} \left\{ l \frac{1+e^{-2qr}}{2} - \right. \\ \left. - \frac{p}{1-p^2} (e^{2qr}-e^{-2qr}) l(1+p) \right\} \quad (\text{H, 151}).$$

$$13) \int \frac{l \cos rx}{1-2p \cos 2rx+p^2} \frac{dx}{q^2-x^2} = \frac{\pi}{2q(1-2p \cos 2qr+p^2)} \left\{ \frac{2p}{1-p^2} \sin 2qr. l(1+p) + qr \right\} \\ (\text{H, 151}).$$

$$14) \int \frac{l \operatorname{Tgr} x}{1-2p \cos 2rx+p^2} \frac{dx}{q^2+x^2} = \frac{\pi}{2q(1-pe^{-qr})(1-pe^{qr})} \left\{ l \frac{e^{qr}-e^{-qr}}{e^{qr}+e^{-qr}} + \right. \\ \left. + \frac{p}{1-p^2} (e^{2qr}-e^{-2qr}) l \frac{1+p}{1-p} \right\} \quad (\text{H, 152}).$$

$$15) \int \frac{l \operatorname{Tgr} x}{1-2p \cos 2rx+p^2} \frac{dx}{q^2-x^2} = \frac{\pi}{q(1-2p \cos 2qr+p^2)} \left\{ \frac{p}{1-p^2} \sin 2qr. l \frac{1-p}{1+p} - \frac{1}{4}\pi \right\} \\ (\text{H, 153}).$$

Dans 8) à 15) on a $[p^2 < 1]$.

$$16) \int l \left(\frac{1+\operatorname{Tg} qx}{1-\operatorname{Tg} qx} \right) \frac{1}{p^2+x^2} \frac{dx}{x} = \frac{\pi}{p^2} \operatorname{Arctg} \frac{e^{2qx}-e^{-2qx}}{e^{2qx}+e^{-2qx}} \quad (\text{IV, 540}).$$

$$17) \int \frac{\pi(1-\cos qx)-2 \sin qx. l x}{\frac{1}{4}\pi^2+(lx)^2} \frac{dx}{x} = 2\pi(1-e^{-1}) \quad (\text{IV, 540}).$$

F. Alg. rat. fract.;

Logarithmique;

Circulaire Directe.

Autre forme. TABLE 423, suite.

Lim. 0 et ∞ .

$$18) \int \frac{\frac{1}{2}\pi (\cos px - \cos qx) + (\sin px - \sin qx)lx}{\frac{1}{4}\pi^2 + (lx)^2} \frac{dx}{x} = \pi (e^{-p} - e^{-q}) \text{ Cauchy, A. M. 17, 84.}$$

$$19) \int lx \cdot \sin px \cdot \sin^{2a} x \frac{dx}{x^{2b-1}} = \frac{(-1)^b \pi}{2^{1+a+1} 1^{1+b-1}} \left\{ \binom{2a}{a} q^{2b-1} \{lq - Z'(2b-1)\} + \right. \\ \left. + \sum_1^p (-1)^n \binom{2a}{a-n} [(2n+q)^{2b-1} \{l(2n+q) - Z'(2b-1)\} - \right. \\ \left. - (2n-q)^{2b-1} \{l(2n-q) - Z'(2b-1)\}] \right\}.$$

$$20) \int lx \cdot \sin px \cdot \sin^{2a+1} x \frac{dx}{x^{2b}} = \frac{(-1)^b \pi}{2^{1+a+1} 1^{1+b-1}} \sum_0^p (-1)^n \binom{2a+1}{a-n} \left[(2n+1+q)^{2b-1} \right. \\ \left. \{l(2n+1+q) - Z'(2b)\} - (2n+1-q)^{2b-1} \{l(2n+1-q) - Z'(2b)\} \right].$$

$$21) \int lx \cdot \cos px \cdot \sin^{2a} x \frac{dx}{x^{2b}} = \frac{(-1)^{b-1} \pi}{2^{1+a+1} 1^{1+b-1}} \left\{ \binom{2a}{a} q^{2b-1} \{lq - Z'(2b)\} + \sum_1^p (-1)^n \binom{2a}{a-n} \right. \\ \left. [(2n+q)^{2b-1} \{l(2n+q) - Z'(2b)\} + (2n-q)^{2b-1} \{l(2n-q) - Z'(2b)\}] \right\}.$$

$$22) \int lx \cdot \cos px \cdot \sin^{2a+1} x \frac{dx}{x^{2b+1}} = \frac{(-1)^{b-1} \pi}{2^{1+a+1} 1^{1+b-1}} \sum_0^p (-1)^n \binom{2a+1}{a-n} \left[(2n+1+q)^{2b} \right. \\ \left. \{l(2n+1+q) - Z'(2b-1)\} + (2n+1-q)^{2b} \{l(2n+1-q) - Z'(2b-1)\} \right].$$

Dans 19) à 22) on a $[a \geq b]$. Voir Enneper, Schl. Z. 11, 251.

F. Alg. rat. ent.;

Logarithmique;

Circulaire Directe.

TABLE 424.

Lim. $-\infty$ et ∞ .

$$1) \int l \sin qx \frac{r+sx}{x^2 + 2px \cos \lambda + p^2} dx = \frac{\pi}{p \sin \lambda} \left(\frac{1}{2} s^2 - r \right) l 2 + \\ + \frac{r - ps \cos \lambda}{2p \sin \lambda} \pi l \{ 1 - 2e^{-2pq \sin \lambda} \cos(2pq \cos \lambda) + e^{-4pq \sin \lambda} \} - \\ - s \pi \operatorname{Arcsin} \left\{ \frac{e^{-2pq \sin \lambda} \sin(2pq \cos \lambda)}{\sqrt{1 - 2e^{-2pq \sin \lambda} \cos(2pq \cos \lambda) + e^{-4pq \sin \lambda}}} \right\} \text{ (IV, 540).}$$

$$2) \int l \cos qx \frac{r+sx}{x^2 + 2px \cos \lambda + p^2} dx = \frac{\pi}{p \sin \lambda} \left(\frac{1}{2} s^2 - r \right) l 2 + \\ + \frac{r - ps \cos \lambda}{2p \sin \lambda} \pi l \{ 1 + 2e^{-2pq \sin \lambda} \cos(2pq \cos \lambda) + e^{-4pq \sin \lambda} \} + \\ + s \pi \operatorname{Arcsin} \left\{ \frac{e^{-2pq \sin \lambda} \sin(2pq \cos \lambda)}{\sqrt{1 + 2e^{-2pq \sin \lambda} \cos(2pq \cos \lambda) + e^{-4pq \sin \lambda}}} \right\} \text{ (IV, 540).}$$

F. Alg. rat. ent.;

Logarithmique:

TABLE 424, suite.

Lim. $-\infty$ et ∞ .

Circulaire Directe.

$$3) \int l Tg qx \frac{r+sx}{x^2+2px \cos \lambda + p^2} dx = \frac{r-ps \cos \lambda}{2p \sin \lambda} \pi l \frac{e^{2pq \sin \lambda} - 2 \cos(2pq \cos \lambda) + e^{-2pq \sin \lambda}}{e^{2pq \sin \lambda} + 2 \cos(2pq \cos \lambda) + e^{-2pq \sin \lambda}} - \\ - s \pi \operatorname{Arcsin} \left\{ \frac{2 e^{-2pq \sin \lambda} \sin(2pq \cos \lambda)}{\sqrt{1 - 2 e^{-2pq \sin \lambda} \cos(4pq \cos \lambda) + e^{-4pq \sin \lambda}}} \right\} \text{ V. T. 424, N. 1, 2.}$$

F. Alg. rat. ent.;

Logarithmique de

TABLE 425.

Lim. 0 et $\frac{\pi}{4}$.

Circul. Directe.

$$1) \int l \sin x \cdot x^{p-1} dx = -\frac{1}{2p} \left(\frac{\pi}{4}\right)^p \left\{ l2 - 2 + \sum_{1:p+2m} \frac{4}{1} \sum_{11} \frac{1}{(4n)^{2m}} \right\} \text{ V. T. 204, N. 6.}$$

$$2) \int l Tg x \frac{x}{\sin 2x} dx = -\frac{1}{64} \pi^3 \text{ V. T. 286, N. 16.}$$

$$3) \int (l Tg x)^2 \frac{x}{\sin 2x} dx = -\frac{5}{512} \pi^5 \text{ V. T. 286, N. 19.}$$

$$4) \int (l Tg x)^3 \frac{x}{\sin 2x} dx = -\frac{61}{3072} \pi^7 \text{ V. T. 286, N. 20.}$$

$$5) \int (l Tg x)^q \frac{x}{\sin 2x} dx = \frac{1}{2} \cos q \pi \cdot \Gamma(q+1) \cdot \sum_0 \frac{(-1)^n}{(2n+1)^{q+1}} \text{ V. T. 286, N. 21.}$$

$$6) \int \sin(2p l Tg x) \frac{x}{\sin 2x} dx = \frac{-\pi}{16p} \frac{(1-e^{p\pi})^2}{1+e^{2p\pi}} \text{ V. T. 304, N. 3.}$$

$$7) \int \frac{x}{\sqrt{l \cot x}} \frac{dx}{\sin 2x} = \frac{1}{2} \sqrt{\pi} \cdot \sum_0 \frac{(-1)^n}{\sqrt{2n+1}} \text{ V. T. 297, N. 9.}$$

$$8) \int \frac{x}{\sqrt{l \cot x^3}} \frac{dx}{\sin 2x} = \infty \text{ V. T. 304, N. 24.}$$

$$9) \int \frac{l Tg x}{\{\pi^2 + (l Tg x)^2\}^2} \frac{x}{\sin 2x} dx = \frac{\pi-3}{16\pi} \text{ V. T. 301, N. 1.}$$

$$10) \int \frac{l Tg x}{\{\pi^2 + (l Tg^2 x)^2\}^2} \frac{x}{\sin 2x} dx = \frac{1}{64\pi} (1-l2) \text{ V. T. 301, N. 2.}$$

$$11) \int \frac{l Tg x}{\{q^2 + (l Tg x)^2\}^2} \frac{x}{\sin 2x} dx = \frac{1}{16q} \left\{ Z' \left(\frac{2q+3\pi}{4\pi} \right) - Z' \left(\frac{2q+\pi}{4\pi} \right) - \frac{\pi}{q} \right\} \text{ V. T. 301, N. 3.}$$

F. Alg. rat. ent.; $[p^2 < 1]$.

Logar. $\int (1 - p^2 \sin^2 x), \int (1 - p^2 \cos^2 x);$ TABLE 426.

Lim. 0 et $\frac{\pi}{2}$.

Circ. Dir. en dén. $\sqrt{1 - p^2 \sin^2 x}, \sqrt{1 - p^2 \cos^2 x};$

$$1) \int \int (1 - p^2 \sin^2 x) \cdot \sin x \cdot \cos x \cdot \sqrt{1 - p^2 \sin^2 x} \cdot x dx = \frac{1}{27p^3} \left[3\pi \left\{ 1 - \frac{3}{2} \int (1 - p^2) \right\} \sqrt{1 - p^2} + \right. \\ \left. + \left\{ 2(11 - 11p^2 + 3p^4) - \frac{3}{2} (1 - p^2) \int (1 - p^2) \right\} F'(p) - (2 - p^2) \{ 14 - 3 \int (1 - p^2) \} E'(p) \right].$$

$$2) \int \int (1 - p^2 \cos^2 x) \cdot \sin x \cdot \cos x \cdot \sqrt{1 - p^2 \cos^2 x} \cdot x dx = \frac{1}{27p^3} \left[-3\pi - \left\{ 2(11 - 11p^2 + 3p^4) + \right. \right. \\ \left. \left. - \frac{3}{2} (1 - p^2) \int (1 - p^2) \right\} F'(p) + (2 - p^2) \{ 14 - 3 \int (1 - p^2) \} E'(p) \right].$$

$$3) \int \int (1 - p^2 \sin^2 x) \frac{\sin x \cdot \cos x}{\sqrt{1 - p^2 \sin^2 x}} x dx = \frac{1}{p^3} \left[\pi \left\{ 1 - \frac{1}{2} \int (1 - p^2) \right\} \sqrt{1 - p^2} + (2 - p^2) F'(p) - \right. \\ \left. - \left\{ 4 - \frac{1}{2} \int (1 - p^2) \right\} E'(p) \right].$$

$$4) \int \int (1 - p^2 \sin^2 x) \frac{\sin x \cdot \cos^3 x}{\sqrt{1 - p^2 \sin^2 x}} x dx = \frac{1}{27p^4} \left[-3 \left\{ 8 - \frac{3}{2} \int (1 - p^2) \right\} \sqrt{1 - p^2} - \right. \\ \left. - \left\{ (32 - 59p^2 + 21p^4) + \frac{3}{2} (1 - p^2) \int (1 - p^2) \right\} F'(p) + \left\{ 2(40 - 47p^2) - \right. \right. \\ \left. \left. - \frac{3}{2} (5 - 7p^2) \int (1 - p^2) \right\} E'(p) \right].$$

$$5) \int \int (1 - p^2 \sin^2 x) \frac{\sin^3 x \cdot \cos x}{\sqrt{1 - p^2 \sin^2 x}} x dx = \frac{1}{27p^4} \left[3 \left\{ (8 + p^2) - \frac{3}{2} (2 + p^2) \int (1 - p^2) \right\} \pi \sqrt{1 - p^2} + \right. \\ \left. + \left\{ (32 - 5p^2 - 6p^4) + \frac{3}{2} (1 - p^2) \int (1 - p^2) \right\} F'(p) - \left\{ 2(40 + 7p^2) + \right. \right. \\ \left. \left. - \frac{3}{2} (5 + 2p^2) \int (1 - p^2) \right\} E'(p) \right].$$

$$6) \int \int (1 - p^2 \cos^2 x) \frac{\sin x \cdot \cos x}{\sqrt{1 - p^2 \cos^2 x}} x dx = \frac{1}{p^3} \left[-\pi - (2 - p^2) F'(p) + \left\{ 4 - \frac{1}{2} \int (1 - p^2) \right\} E'(p) \right].$$

$$7) \int \int (1 - p^2 \cos^2 x) \frac{\sin x \cdot \cos^3 x}{\sqrt{1 - p^2 \cos^2 x}} x dx = \frac{1}{27p^4} \left[-24\pi - \left\{ (32 - 5p^2 - 6p^4) + \right. \right. \\ \left. \left. + \frac{3}{2} (1 - p^2) \int (1 - p^2) \right\} F'(p) + \left\{ 2(40 + 7p^2) - \frac{3}{2} (5 + 2p^2) \int (1 - p^2) \right\} E'(p) \right].$$

$$8) \int \int (1 - p^2 \cos^2 x) \frac{\sin^3 x \cdot \cos x}{\sqrt{1 - p^2 \cos^2 x}} x dx = \frac{1}{27p^4} \left[3(8 - 9p^2) \pi + \left\{ (32 - 59p^2 + 21p^4) + \right. \right. \\ \left. \left. + \frac{3}{2} (1 - p^2) \int (1 - p^2) \right\} F'(p) - \left\{ 2(40 - 47p^2) - \frac{3}{2} (5 - 7p^2) \int (1 - p^2) \right\} E'(p) \right].$$

F. Alg. rat. ent.; $[p^2 < 1]$.

Logar. $\int (1 - p^2 \sin^2 x), \int (1 - p^2 \cos^2 x);$ TABLE 426, suite. Lim. 0 et $\frac{\pi}{2}$.

Circ. Dir. en dén. $\sqrt{1 - p^2 \sin^2 x}, \sqrt{1 - p^2 \cos^2 x};$

$$9) \int \int (1 - p^2 \sin^2 x) \frac{\sin x \cdot \cos x}{\sqrt{1 - p^2 \sin^2 x}} x dx = \frac{1}{p^2} \left[\left\{ 1 + \frac{1}{2} \int (1 - p^2) \right\} \frac{\pi}{\sqrt{1 - p^2}} - \left\{ 2 + \frac{1}{2} \int (1 - p^2) \right\} F'(p) \right].$$

$$10) \int \int (1 - p^2 \sin^2 x) \frac{\sin x \cdot \cos^2 x}{\sqrt{1 - p^2 \sin^2 x}} x dx = \frac{1}{p^2} \left[-\pi \int (1 - p^2) \cdot \sqrt{1 - p^2} + \left\{ (4 - 3p^2) + \frac{1}{2} (1 - p^2) \int (1 - p^2) \right\} F'(p) - \left\{ 4 - \frac{1}{2} \int (1 - p^2) \right\} E'(p) \right].$$

$$11) \int \int (1 - p^2 \sin^2 x) \frac{\sin x \cdot \cos^3 x}{\sqrt{1 - p^2 \sin^2 x}} x dx = \frac{1}{27 p^6} \left[-12 \left\{ 2 - 3 \int (1 - p^2) \right\} \pi \sqrt{1 - p^2} - \left\{ 2(70 - 124p^2 + 51p^4) + \frac{3}{2} (10 - 9p^2) (1 - p^2) \int (1 - p^2) \right\} F'(p) + \left\{ 2(94 - 101p^2) - 3(7 - 8p^2) \int (1 - p^2) \right\} E'(p) \right].$$

$$12) \int \int (1 - p^2 \sin^2 x) \frac{\sin^2 x \cdot \cos x}{\sqrt{1 - p^2 \sin^2 x}} x dx = \frac{1}{p^2} \left[\left\{ p^2 + \frac{1}{2} (2 - p^2) \int (1 - p^2) \right\} \frac{\pi}{\sqrt{1 - p^2}} - \left\{ (4 - p^2) + \frac{1}{2} \int (1 - p^2) \right\} F'(p) + \left\{ 4 - \frac{1}{2} \int (1 - p^2) \right\} E'(p) \right].$$

$$13) \int \int (1 - p^2 \sin^2 x) \frac{\sin^2 x \cdot \cos^2 x}{\sqrt{1 - p^2 \sin^2 x}} x dx = \frac{1}{27 p^6} \left[3 \left\{ 8(1 - p^2) - 3(4 - p^2) \int (1 - p^2) \right\} \sqrt{1 - p^2} + \left\{ 7(20 - 20p^2 + 3p^4) + 15(1 - p^2) \int (1 - p^2) \right\} F'(p) + (2 - p^2) \left\{ -94 + \frac{21}{2} \int (1 - p^2) \right\} E'(p) \right].$$

$$14) \int \int (1 - p^2 \sin^2 x) \frac{\sin^2 x \cdot \cos x}{\sqrt{1 - p^2 \sin^2 x}} x dx = \frac{1}{27 p^6} \left[3 \left\{ (8 - 16p^2 - p^4) + \frac{3}{2} (8 - 4p^2 - p^4) \int (1 - p^2) \right\} \frac{\pi}{\sqrt{1 - p^2}} - \left\{ 2(70 - 16p^2 - 3p^4) + \frac{3}{2} (10 - p^2) \int (1 - p^2) \right\} F'(p) + \left\{ 2(94 + 7p^4) - 3(7 + p^2) \int (1 - p^2) \right\} E'(p) \right].$$

$$15) \int \int (1 - p^2 \cos^2 x) \frac{\sin x \cdot \cos x}{\sqrt{1 - p^2 \cos^2 x}} x dx = \frac{1}{p^2} \left[-\pi + \left\{ 2 + \frac{1}{2} \int (1 - p^2) \right\} F'(p) \right].$$

$$16) \int \int (1 - p^2 \cos^2 x) \frac{\sin x \cdot \cos^2 x}{\sqrt{1 - p^2 \cos^2 x}} x dx = \frac{1}{p^2} \left[\left\{ (4 - p^2) + \frac{1}{2} \int (1 - p^2) \right\} F'(p) - \left\{ 4 - \frac{1}{2} \int (1 - p^2) \right\} E'(p) \right].$$

F. Alg. rat. ent.; $[p^2 < 1]$.

Logar. $\int (1-p^2 \sin^2 x), \int (1-p^2 \cos^2 x)$; TABLE 426, suite. Lim. 0 et $\frac{\pi}{2}$.

Circ. Dir. en dén. $\sqrt{1-p^2 \sin^2 x}, \sqrt{1-p^2 \cos^2 x}$;

$$17) \int \int (1-p^2 \cos^2 x) \frac{\sin x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} x dx = \frac{1}{27p^6} \left[24\pi + \{2(70-16p^2-3p^4) + \right. \\ \left. + \frac{3}{2} \{(10-p^2)\int(1-p^2)\} F'(p) - \{2(94+7p^2)-3(7+p^2)\int(1-p^2)\} E'(p)\} \right].$$

$$18) \int \int (1-p^2 \cos^2 x) \frac{\sin^3 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} x dx = \frac{1}{p^4} \left[-p^2\pi - \{(4-3p^2) + \right. \\ \left. + \frac{1}{2}(1-p^2)\int(1-p^2)\} F'(p) + \{4-\frac{1}{2}\int(1-p^2)\} E'(p) \right].$$

$$19) \int \int (1-p^2 \cos^2 x) \frac{\sin^5 x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} x dx = \frac{1}{27p^6} \left[-24\pi - \{7(20-20p^2+3p^4) + \right. \\ \left. + 15(1-p^2)\int(1-p^2)\} F'(p) + (2-p^2) \{94-\frac{21}{2}\int(1-p^2)\} E'(p) \right].$$

$$20) \int \int (1-p^2 \cos^2 x) \frac{\sin^7 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} x dx = \frac{1}{27p^6} \left[3(8-9p^4)\pi + \{2(70-124p^2+51p^4) + \right. \\ \left. + \frac{3}{2}(10-9p^2)(1-p^2)\int(1-p^2)\} F'(p) + \{-2(94-101p^2) + \frac{3}{2}(7-8p^2)\int(1-p^2)\} E'(p) \right].$$

Sur 1) à 20) voyez M, D. 16, 28.

F. Alg. rat. ent.;

Logar. $\int (1-p^2 \sin^2 x), \int (1-p^2 \cos^2 x)$; TABLE 427.

Lim. 0 et $\frac{\pi}{2}$.

Circ. Dir. en dén. $\sqrt{1-p^2 \sin^2 x}$; $[p^2 < 1]$.

$$1) \int \int (1-p^2 \sin^2 x) \frac{\sin x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{9p^4(1-p^2)} \left[\left\{1 + \frac{3}{2}\int(1-p^2)\right\} \frac{\pi}{\sqrt{1-p^2}} + \right. \\ \left. + 3(2-p^2)F'(p) - \left\{8 + \frac{3}{2}\int(1-p^2)\right\} E'(p) \right].$$

$$2) \int \int (1-p^2 \sin^2 x) \frac{\sin^3 x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{9p^4} \left[\{8+3\int(1-p^2)\} \frac{\pi}{\sqrt{1-p^2}} - 3\{(8-p^2) + \right. \\ \left. + \frac{3}{2}\int(1-p^2)\} F'(p) + \{8 + \frac{3}{2}\int(1-p^2)\} E'(p) \right].$$

$$3) \int \int (1-p^2 \sin^2 x) \frac{\sin^5 x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{9p^4} \left[-4\{2+3\int(1-p^2)\} \pi \sqrt{1-p^2} + \right. \\ \left. + 8\{(20-18p^2+p^4) + 3(1-p^2)\int(1-p^2)\} F'(p) - \{4(11-2p^2) - \right. \\ \left. - \frac{3}{2}(2+p^2)\int(1-p^2)\} E'(p) \right].$$

- $$4) \int \int (1-p^2 \sin^2 x) \frac{\sin x \cdot \cos^7 x}{\sqrt{1-p^2 \sin^2 x^5}} x dx = \frac{1}{27p^3} \left[72 \int (1-p^2) \cdot \pi \sqrt{1-p^2} - \right. \\ \left. - \left\{ (320 - 590p^2 + 273p^4 - 9p^6) + \frac{3}{2} (28 - 27p^2) (1-p^2) \int (1-p^2) \right\} F'(p) + \right. \\ \left. + \left\{ 2(160 - 179p^2 + 12p^4) - \frac{3}{2} (20 - 19p^2 - 3p^4) \int (1-p^2) \right\} E'(p) \right].$$
- $$5) \int \int (1-p^2 \sin^2 x) \frac{\sin^3 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x^5}} x dx = \frac{1}{9p^4(1-p^2)} \left[- \left\{ (8-9p^2) + \frac{3}{2} (2-3p^2) \int (1-p^2) \right\} \right. \\ \left. - \frac{\pi}{\sqrt{1-p^2}} + 3 \left\{ (8-7p^2) + \frac{3}{2} (1-p^2) \int (1-p^2) \right\} F'(p) - \left\{ 8 + \frac{3}{2} \int (1-p^2) \right\} E'(p) \right].$$
- $$6) \int \int (1-p^2 \sin^2 x) \frac{\sin^3 x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x^5}} x dx = \frac{1}{9p^6} \left[\left\{ 8 + 3(4-3p^2) \int (1-p^2) \right\} \frac{\pi}{\sqrt{1-p^2}} - \right. \\ \left. - 3(2-p^2) \left\{ 10 + \frac{3}{2} \int (1-p^2) \right\} F'(p) + \left\{ 44 - 3 \int (1-p^2) \right\} E'(p) \right].$$
- $$7) \int \int (1-p^2 \sin^2 x) \frac{\sin^5 x \cdot \cos^5 x}{\sqrt{1-p^2 \sin^2 x^5}} x dx = \frac{1}{27p^8} \left[-12 \left\{ 2p^2 + 3(2-p^2) \int (1-p^2) \right\} \pi \sqrt{1-p^2} + \right. \\ \left. + \left\{ (320 - 410p^2 + 111p^4) + \frac{3}{2} (28 - 9p^2) (1-p^2) \int (1-p^2) \right\} F'(p) - \right. \\ \left. - \left\{ 2(160 - 113p^2) - \frac{3}{2} (20 - 13p^2) \int (1-p^2) \right\} E'(p) \right].$$
- $$8) \int \int (1-p^2 \sin^2 x) \frac{\sin^5 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x^5}} x dx = \frac{1}{9p^6(1-p^2)} \left[- \left\{ (8-9p^2) + \frac{3}{2} (8-12p^2+3p^4) \right. \right. \\ \left. \left. \int (1-p^2) \right\} \frac{\pi}{\sqrt{1-p^2}} + 3 \left\{ (20 - 22p^2 + 3p^4) + 3(1-p^2) \int (1-p^2) \right\} F'(p) + \right. \\ \left. + \left\{ -4(11-9p^2) + \frac{3}{2} (2-3p^2) \int (1-p^2) \right\} E'(p) \right].$$
- $$9) \int \int (1-p^2 \sin^2 x) \frac{\sin^5 x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x^5}} x dx = \frac{1}{27p^8} \left[3 \left\{ 8p^2(2-p^2) + 3(8-8p^2+p^4) \int (1-p^2) \right\} \right. \\ \left. - \frac{\pi}{\sqrt{1-p^2}} - \left\{ (320 - 230p^2 + 21p^4) + \frac{3}{2} (28 - 19p^2) \int (1-p^2) \right\} F'(p) + \right. \\ \left. + \left\{ 2(160 - 47p^2) - \frac{3}{2} (20 - 7p^2) \int (1-p^2) \right\} E'(p) \right].$$

F. Alg. rat. ent.;

Logar. $\int \ln(1-p^2 \sin^2 x), \int \ln(1-p^2 \cos^2 x)$; TABLE 427, suite. Lim. 0 et $\frac{\pi}{2}$.
Circ. Dir. en dén. $\sqrt{1-p^2 \sin^2 x^5}; [p^2 < 1]$.

$$10) \int \ln(1-p^2 \sin^2 x) \frac{\sin^7 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x^5}} x dx = \frac{1}{27 p^3 (1-p^2)} \left[-3 \left\{ p^2 (24 - 24 p^2 - p^4) + \right. \right. \\ \left. \left. + \frac{3}{2} (16 - 24 p^4 + 6 p^4 + p^6) \ln(1-p^2) \right\} \frac{\pi}{\sqrt{1-p^2}} + \left\{ (320 - 370 p^2 + 53 p^4 + 6 p^6) + \right. \right. \\ \left. \left. + \frac{3}{2} (28 - p^4) (1-p^2) \ln(1-p^2) \right\} F'(p) + \left\{ -2 (160 - 141 p^2 - 7 p^4) + \right. \right. \\ \left. \left. + \frac{3}{2} (20 - 21 p^2 - 2 p^4) \ln(1-p^2) \right\} E'(p) \right].$$

$$11) \int \ln(1-p^2 \cos^2 x) \frac{\sin x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x^5}} x dx = \frac{1}{9 p^2 (1-p^2)} \left[-(1-p^2) \pi - 3 (2-p^2) F'(p) + \right. \\ \left. + \left\{ 8 + \frac{3}{2} \ln(1-p^2) \right\} E'(p) \right].$$

$$12) \int \ln(1-p^2 \cos^2 x) \frac{\sin x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x^5}} x dx = \frac{1}{9 p^4 (1-p^2)} \left[8 (1-p^2) \pi - 3 \left\{ (8-7 p^2) + \right. \right. \\ \left. \left. + \frac{3}{2} (1-p^4) \ln(1-p^2) \right\} F'(p) + \left\{ 8 + \frac{3}{2} \ln(1-p^2) \right\} E'(p) \right].$$

$$13) \int \ln(1-p^2 \cos^2 x) \frac{\sin x \cdot \cos^5 x}{\sqrt{1-p^2 \cos^2 x^5}} x dx = \frac{1}{9 p^6 (1-p^2)} \left[8 (1-p^2) \pi - 3 \left\{ (20-22 p^2 + 3 p^4) + \right. \right. \\ \left. \left. + 3 (1-p^4) \ln(1-p^2) \right\} F'(p) + \left\{ 4 (11-9 p^2) - \frac{3}{2} (2-3 p^2) \ln(1-p^2) \right\} E'(p) \right].$$

$$14) \int \ln(1-p^2 \cos^2 x) \frac{\sin x \cdot \cos^7 x}{\sqrt{1-p^2 \cos^2 x^5}} x dx = \frac{1}{27 p^3 (1-p^2)} \left[- \left\{ (320 - 370 p^2 + 53 p^4 + 6 p^6) + \right. \right. \\ \left. \left. + \frac{3}{2} (28 - p^4) (1-p^2) \ln(1-p^2) \right\} F'(p) + \left\{ 2 (160 - 141 p^2 - 7 p^4) - \right. \right. \\ \left. \left. - \frac{3}{2} (20 - 21 p^2 - 2 p^4) \ln(1-p^2) \right\} E'(p) \right].$$

$$15) \int \ln(1-p^2 \cos^2 x) \frac{\sin^3 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x^5}} x dx = \frac{1}{9 p^4} \left[-(8+p^2) \pi + 3 \left\{ (8-p^2) + \right. \right. \\ \left. \left. + \frac{3}{2} \ln(1-p^2) \right\} F'(p) - \left\{ 8 + \frac{3}{2} \ln(1-p^2) \right\} E'(p) \right].$$

$$16) \int \ln(1-p^2 \cos^2 x) \frac{\sin^3 x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x^5}} x dx = \frac{1}{9 p^6} \left[-8 (1-p^4) \pi + 3 (2-p^2) \right. \\ \left. \left\{ 10 + \frac{3}{2} \ln(1-p^2) \right\} F'(p) + \left\{ -44 + 3 \ln(1-p^2) \right\} E'(p) \right].$$

F. Alg. rat. ent.;

Logar. $\int (1-p^2 \sin^2 x), \int (1-p^2 \cos^2 x)$; TABLE 427, suite.

Lim. 0 et $\frac{\pi}{2}$.

Circ. Dir. en dén. $\sqrt{1-p^2 \sin^2 x}$; $[p^2 < 1]$.

$$17) \int \int (1-p^2 \cos^2 x) \frac{\sin^3 x \cdot \cos^5 x}{\sqrt{1-p^2 \cos^2 x}} x dx = \frac{1}{27 p^6} \left[24 p^2 \pi + \left\{ (320 - 230 p^2 + 21 p^4) + \right. \right. \\ \left. \left. + \frac{3}{2} (28 - 19 p^2) \int (1-p^2) \right\} F'(p) + \left\{ -2 (160 - 47 p^2) + \frac{3}{2} (20 - 7 p^2) \int (1-p^2) \right\} E'(p) \right].$$

$$18) \int \int (1-p^2 \cos^2 x) \frac{\sin^5 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} x dx = \frac{1}{9 p^6} \left[(8 - 16 p^2 - p^4) \pi - 3 \left\{ (20 - 18 p^2 + p^4) + \right. \right. \\ \left. \left. + 3 (1-p^2) \int (1-p^2) \right\} F'(p) + \left\{ 4 (11 - 2 p^2) - \frac{3}{2} (2 + p^2) \int (1-p^2) \right\} E'(p) \right].$$

$$19) \int \int (1-p^2 \cos^2 x) \frac{\sin^5 x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} x dx = \frac{1}{27 p^8} \left[-24 p^2 (4 - 3 p^2) \pi - \left\{ (320 - 410 p^2 + \right. \right. \\ \left. \left. + 111 p^4) + \frac{3}{2} (28 - 9 p^2) (1-p^2) \int (1-p^2) \right\} F'(p) + \left\{ 2 (160 - 113 p^2) - \right. \right. \\ \left. \left. - \frac{3}{2} (20 - 13 p^2) \int (1-p^2) \right\} E'(p) \right].$$

$$20) \int \int (1-p^2 \cos^2 x) \frac{\sin^7 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} x dx = \frac{1}{27 p^8} \left[3 p^2 (40 - 40 p^2 - p^4) \pi + \left\{ (320 - 590 p^2 + \right. \right. \\ \left. \left. + 273 p^4 - 9 p^6) + \frac{3}{2} (28 - 27 p^2) (1-p^2) \int (1-p^2) \right\} F'(p) + \left\{ -2 (160 - 179 p^2 + 12 p^4) + \right. \right. \\ \left. \left. + \frac{3}{2} (20 - 19 p^2 - 3 p^4) \int (1-p^2) \right\} E'(p) \right].$$

Sur 1) à 20) voyez M, D. 16, 28.

F. Alg. rat. ent.;

Logar. $\int (1-p^2 \sin^2 x)$;

TABLE 428.

Lim. 0 et $\frac{\pi}{2}$.

Circ. Dir. en dén. $\sqrt{1-p^2 \sin^2 x}$; $[p^2 < 1]$.

$$1) \int \int (1-p^2 \sin^2 x) \frac{\sin x \cos x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{225 p^2 (1-p^2)^2} \left[\left\{ 1 + \frac{5}{2} \int (1-p^2) \right\} \frac{9 \pi}{\sqrt{1-p^2}} + \right. \\ \left. + \left\{ 2 (53 - 53 p^2 + 15 p^4) + \frac{15}{2} (1-p^2) \int (1-p^2) \right\} F'(p) - (2-p^2) \left\{ 62 + 15 \int (1-p^2) \right\} E'(p) \right].$$

$$2) \int \int (1-p^2 \sin^2 x) \frac{\sin x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{225 p^4 (1-p^2)} \left[\left\{ 16 + 15 \int (1-p^2) \right\} \frac{\pi}{\sqrt{1-p^2}} + \right. \\ \left. + \left\{ (41 + 31 p^2 - 30 p^4) - \frac{15}{2} (1-p^2) \int (1-p^2) \right\} F'(p) - \right. \\ \left. - \left\{ 2 (38 + 31 p^2) + \frac{15}{2} (1 + 2 p^2) \int (1-p^2) \right\} E'(p) \right].$$

F. Alg. rat. ent.;

Logar. $\ell(1-p^2 \sin^2 x)$;

Circ. Dir. en dén. $\sqrt{1-p^2 \sin^2 x}$; [$p^2 < 1$].

TABLE 428, suite.

Lim. 0 et $\frac{\pi}{2}$.

$$3) \int \ell(1-p^2 \sin^2 x) \frac{\sin x \cdot \cos^5 x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{225 p^6} \left[4 \left\{ 16 + 15 \ell(1-p^2) \right\} \frac{\pi}{\sqrt{1-p^2}} - \right. \\ \left. - \left\{ 2(322 - 22 p^2 - 15 p^4) + \frac{15}{2} (14 + p^2) \ell(1-p^2) \right\} F'(p) + \right. \\ \left. + \left\{ 2(138 + 31 p^2) + 15(3 + p^2) \ell(1-p^2) \right\} E'(p) \right].$$

$$4) \int \ell(1-p^2 \sin^2 x) \frac{\sin x \cdot \cos^7 x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{225 p^8} \left[-24 \left\{ 16 + 15 \ell(1-p^2) \right\} \pi \sqrt{1-p^2} + \right. \\ \left. + \left\{ (2144 - 2038 p^2 + 89 p^4 + 30 p^6) + \frac{15}{2} (14 + p^2) (1-p^2) \ell(1-p^2) \right\} F'(p) + \right. \\ \left. + \left\{ -2(688 - 207 p^2 + 31 p^4) + \frac{15}{2} (1 + 9 p^2 + 2 p^4) \ell(1-p^2) \right\} E'(p) \right].$$

$$5) \int \ell(1-p^2 \sin^2 x) \frac{\sin x \cdot \cos^9 x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{675 p^{10}} \left[576 \left\{ 2 + 5 \ell(1-p^2) \right\} \pi \sqrt{1-p^2} - \right. \\ \left. - \left\{ 2(7216 - 13648 p^2 + 6608 p^4 - 201 p^6 - 45 p^8) + \frac{15}{2} (272 - 264 p^2 - 3 p^4) \right. \right. \\ \left. \left. (1-p^2) \ell(1-p^2) \right\} F'(p) + \left\{ 2(6064 - 7160 p^2 + 828 p^4 - 93 p^6) + \right. \right. \\ \left. \left. + 30(56 - 18 p^2 - 18 p^4 - 3 p^6) \ell(1-p^2) \right\} E'(p) \right].$$

$$6) \int \ell(1-p^2 \sin^2 x) \frac{\sin^3 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{225 p^4 (1-p^2)^2} \left[- \left\{ (16 - 25 p^2) + \frac{15}{2} (2 - 5 p^2) \right. \right. \\ \left. \left. \ell(1-p^2) \right\} \frac{\pi}{\sqrt{1-p^2}} + \left\{ -(44 - 119 p^2 + 45 p^4) + \frac{15}{2} (1-p^2) \ell(1-p^2) \right\} F'(p) + \right. \\ \left. + \left\{ 2(38 - 69 p^2) + \frac{15}{2} (1 - 3 p^2) \ell(1-p^2) \right\} E'(p) \right].$$

$$7) \int \ell(1-p^2 \sin^2 x) \frac{\sin^5 x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{225 p^6 (1-p^2)} \left[- \left\{ 8(23 - 25 p^2) + 15(4 - 5 p^2) \right. \right. \\ \left. \left. \ell(1-p^2) \right\} \frac{\pi}{\sqrt{1-p^2}} + \left\{ (614 - 644 p^2 + 45 p^4) + 105(1-p^2) \ell(1-p^2) \right\} F'(p) - \right. \\ \left. - 3(2 - p^2) \left\{ 16 + \frac{15}{2} \ell(1-p^2) \right\} E'(p) \right].$$

F. Alg. rat. ent.;

Logar. $\int (1-p^2 \sin^2 x)$; TABLE 42S, suite.

Lim. 0 et $\frac{\pi}{2}$.

Circ. Dir. en dén. $\sqrt{1-p^2 \sin^2 x}$; [$p^2 < 1$].

$$8) \int \int (1-p^2 \sin^2 x) \frac{\sin^3 x \cdot \cos^5 x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{225 p^3} \left[4 \{ 2(48-25 p^2) + 15(6-5 p^2) \int (1-p^2) \} \right. \\ \left. \frac{\pi}{\sqrt{1-p^2}} - \left\{ (2144-1394 p^2 + 45 p^4) + \frac{15}{2} (4-29 p^2) \int (1-p^2) \right\} F'(p) + \right. \\ \left. + \left\{ 2(688-69 p^2) - \frac{15}{2} (4+3 p^2) \int (1-p^2) \right\} E'(p) \right].$$

$$9) \int \int (1-p^2 \sin^2 x) \frac{\sin^3 x \cdot \cos^7 x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{675 p^5} \left[-72 \{ 16 + 5(8-5 p^2) \int (1-p^2) \} \right. \\ \left. \pi \sqrt{1-p^2} + \{ (14432-20864 p^2 + 7092 p^4 - 135 p^6) + 30(68-33 p^2)(1-p^2) \right. \\ \left. \int (1-p^2) \right\} F'(p) - \left\{ 2(6064-5096 p^2 + 207 p^4) + \frac{15}{2} (112-44 p^2 + 9 p^4) \int (1-p^2) \right\} E'(p) \right].$$

$$10) \int \int (1-p^2 \sin^2 x) \frac{\sin^5 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{225 p^3 (1-p^2)^2} \left[\left\{ (184-40 p^2 + 225 p^4) + \right. \right. \\ \left. \left. + \frac{15}{2} (8-20 p^2 + 15 p^4) \int (1-p^2) \right\} \frac{\pi}{\sqrt{1-p^2}} - \left\{ 2(322-622 p^2 + 285 p^4) + \right. \right. \\ \left. \left. + \frac{15}{2} (14-15 p^2)(1-p^2) \int (1-p^2) \right\} F'(p) + \left\{ 2(138-169 p^2) + 15(3-4 p^2) \int (1-p^2) \right\} E'(p) \right].$$

$$11) \int \int (1-p^2 \sin^2 x) \frac{\sin^5 x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{225 p^3 (1-p^2)} \left[- \{ 16(24-25 p^2) + \right. \\ \left. + 15(24-40 p^2 + 15 p^4) \int (1-p^2) \right\} \frac{\pi}{\sqrt{1-p^2}} + \left\{ (2144-2894 p^2 + 795 p^4) + \right. \\ \left. + \frac{15}{2} (44-15 p^2)(1-p^2) \int (1-p^2) \right\} F'(p) - \left\{ 2(688-619 p^2) - \frac{15}{2} (4-7 p^2) \int (1-p^2) \right\} E'(p) \right].$$

$$12) \int \int (1-p^2 \sin^2 x) \frac{\sin^5 x \cdot \cos^5 x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{675 p^5} \left[12 \{ 2(48-25 p^2) + 15(16-20 p^2 + 5 p^4) \right. \\ \left. \int (1-p^2) \right\} \frac{\pi}{\sqrt{1-p^2}} - \left\{ 2(7216-7216 p^2 + 1455 p^4) + \frac{15}{2} (272-272 p^2 + 45 p^4) \right. \\ \left. \int (1-p^2) \right\} F'(p) + 4(2-p^2) \{ 1516-105 \int (1-p^2) \} E'(p) \right].$$

$$13) \int \int (1-p^2 \sin^2 x) \frac{\sin^7 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{225 p^3 (1-p^2)^2} \left[3 \left\{ (128-200 p^2 + 75 p^4) + \right. \right. \\ \left. \left. + \frac{15}{2} (16-40 p^2 - 30 p^4 - 5 p^6) \int (1-p^2) \right\} \frac{\pi}{\sqrt{1-p^2}} - \left\{ (2144-4394 p^2 + 2445 p^4 - 225 p^6) + \right. \right. \\ \left. \left. + \frac{15}{2} (44-45 p^2)(1-p^2) \int (1-p^2) \right\} F'(p) + \left\{ 2(688-1169 p^2 + 450 p^4) - \right. \right. \\ \left. \left. - \frac{15}{2} (4-17 p^2 + 15 p^4) \int (1-p^2) \right\} E'(p) \right].$$

F. Alg. rat. ent.;

Logar. $\ell(1-p^2 \sin^2 x)$; TABLE 428, suite.

Lim. 0 et $\frac{\pi}{2}$.

Circ. Dir. en dén. $\sqrt{1-p^2 \sin^2 x}$; [$p^2 < 1$]

$$14) \int \ell(1-p^2 \sin^2 x) \frac{\sin^7 x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{675 p^{10} (1-p^2)} \left[-3 \{ 9(48-75p^4+25p^6) + \right. \\ \left. + 15(64-120p^2+60p^4-5p^6) \ell(1-p^2) \} \frac{\pi}{\sqrt{1-p^2}} + \{ (14432-22432p^2 + \right. \\ \left. + 8660p^4-525p^6) + 30(68-35p^2)(1-p^2) \ell(1-p^2) \} F'(p) - \{ 2(6064-7032p^2 + \right. \\ \left. + 1175p^4) + \frac{15}{2} (112-156p^2+35p^4) \ell(1-p^2) \} E'(p) \right].$$

$$15) \int \ell(1-p^2 \sin^2 x) \frac{\sin^9 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{675 p^{10} (1-p^2)^2} \left[3 \{ (384-1200p^4 + \right. \\ \left. + 800p^6+25p^8) + \frac{15}{2} (128-320p^2+240p^4-40p^6-5p^8) \ell(1-p^2) \} \frac{\pi}{\sqrt{1-p^2}} - \right. \\ \left. - \{ 2(7216-15216p^2+8955p^4-925p^6-75p^8) + \frac{15}{2} (272-280p^2+5p^4) \right. \\ \left. (1-p^2) \ell(1-p^2) \} F'(p) + \{ 2(6064-11032p^2-4700p^4+175p^6) - \right. \\ \left. - 15(56-128p^2+70p^4+5p^6) \ell(1-p^2) \} E'(p) \right].$$

Sur 1) à 15) voyez M, D. 16, 28.

F. Alg. rat. ent.;

Logar. $\ell(1-p^2 \cos^2 x)$; TABLE 429.

Lim. 0 et $\frac{\pi}{2}$.

Circ. Dir. en dén. $\sqrt{1-p^2 \cos^2 x}$; [$p^2 < 1$].

$$1) \int \ell(1-p^2 \cos^2 x) \frac{\sin x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} x dx = \frac{1}{225 p^2 (1-p^2)^2} \left[-9(1-p^2)^2 \pi - \right. \\ \left. - \{ 2(53-53p^2+15p^4) + \frac{15}{2} (1-p^2) \ell(1-p^2) \} F'(p) + \right. \\ \left. + (2-p^2) \{ 62+15 \ell(1-p^2) \} E'(p) \right].$$

$$2) \int \ell(1-p^2 \cos^2 x) \frac{\sin^3 x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} x dx = \frac{1}{225 p^4 (1-p^2)^2} \left[16(1-p^2)^2 \pi + \right. \\ \left. + \{ (44-119p^2+45p^4) - \frac{15}{2} (1-p^2) \ell(1-p^2) \} F'(p) - \{ 2(38-69p^2) + \right. \\ \left. + \frac{15}{2} (1-3p^2) \ell(1-p^2) \} E'(p) \right].$$

F. Alg. rat. ent.;

Logar. $\int (1-p^2 \cos^2 x)$;

TABLE 429, suite.

Lim. 0 et $\frac{\pi}{2}$.

Circ. Dir. en dén. $\sqrt{1-p^2 \cos^2 x}$; [$p^2 < 1$].

$$3) \int \int (1-p^2 \cos^2 x) \frac{\sin x \cdot \cos^4 x}{\sqrt{1-p^2 \cos^2 x}} x dx = \frac{1}{225 p^6 (1-p^2)^2} \left[-184(1-p^2)^2 \pi + \right. \\ \left. + \left\{ 2(322 - 622 p^2 + 285 p^4) + \frac{15}{2} (14 - 15 p^2) (1-p^2) \int (1-p^2) \right\} F'(p) - \right. \\ \left. - \left\{ 2(138 - 169 p^2) + 15(3 - 4 p^2) \int (1-p^2) \right\} E'(p) \right].$$

$$4) \int \int (1-p^2 \cos^2 x) \frac{\sin x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} x dx = \frac{1}{225 p^5 (1-p^2)^2} \left[16(1-p^2)^2 \pi + \right. \\ \left. + \left\{ (2144 - 4394 p^2 + 2445 p^4 - 225 p^6) + \frac{15}{2} (44 - 45 p^2) (1-p^2) \int (1-p^2) \right\} F'(p) + \right. \\ \left. + \left\{ -2(688 - 1169 p^2 + 450 p^4) + \frac{15}{2} (4 - 17 p^2 + 15 p^4) \int (1-p^2) \right\} E'(p) \right].$$

$$5) \int \int (1-p^2 \cos^2 x) \frac{\sin x \cdot \cos^2 x}{\sqrt{1-p^2 \cos^2 x}} x dx = \frac{1}{675 p^{10} (1-p^2)^2} \left[16(1-p^2)^2 \pi + \right. \\ \left. + \left\{ 2(7216 - 15216 p^2 + 8955 p^4 - 925 p^6 - 75 p^8) + \frac{15}{2} (272 - 280 p^2 + 5 p^4) \right. \right. \\ \left. \left. (1-p^2) \int (1-p^2) \right\} F'(p) + \left\{ -2(6064 - 11032 p^2 + 4700 p^4 + 175 p^6) + \right. \right. \\ \left. \left. + 15(56 - 128 p^2 + 70 p^4 + 5 p^6) \int (1-p^2) \right\} E'(p) \right].$$

$$6) \int \int (1-p^2 \cos^2 x) \frac{\sin^2 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} x dx = \frac{1}{225 p^4 (1-p^2)^2} \left[-(16 + 9 p^2) (1-p^2) \pi + \right. \\ \left. + \left\{ -(44 + 31 p^2 - 30 p^4) + \frac{15}{2} (1-p^2) \int (1-p^2) \right\} F'(p) + \left\{ 2(38 + 31 p^2) + \right. \right. \\ \left. \left. + \frac{15}{2} (1 + 2 p^2) \int (1-p^2) \right\} E'(p) \right].$$

$$7) \int \int (1-p^2 \cos^2 x) \frac{\sin^2 x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} x dx = \frac{1}{225 p^6 (1-p^2)^2} \left[8(23 + 2 p^2) (1-p^2) \pi - \right. \\ \left. - \left\{ (644 - 644 p^2 + 45 p^4) + 105(1-p^2) \int (1-p^2) \right\} F'(p) + \right. \\ \left. + 3(2 - p^2) \left\{ 46 + \frac{15}{2} \int (1-p^2) \right\} E'(p) \right].$$

$$8) \int \int (1-p^2 \cos^2 x) \frac{\sin^2 x \cdot \cos^5 x}{\sqrt{1-p^2 \cos^2 x}} x dx = \frac{1}{225 p^8 (1-p^2)^2} \left[-8(23 + 2 p^2) (1-p^2) \pi - \right. \\ \left. - \left\{ (2144 - 2894 p^2 + 795 p^4) + \frac{15}{2} (44 - 15 p^2) (1-p^2) \int (1-p^2) \right\} F'(p) + \right. \\ \left. + \left\{ 2(688 - 619 p^2) - \frac{15}{2} (4 - 7 p^2) \int (1-p^2) \right\} E'(p) \right].$$

F. Alg. rat. ent.;

Logar. $\int (1 - p^2 \cos^2 x)$;

TABLE 429, suite.

Lim. 0 et $\frac{\pi}{2}$.

Circ. Dir. en dén. $\sqrt{1 - p^2 \cos^2 x}$; [$p^2 < 1$].

$$9) \int \int (1 - p^2 \cos^2 x) \frac{\sin^3 x \cdot \cos^3 x}{\sqrt{1 - p^2 \cos^2 x}} x dx = \frac{1}{675 p^{10} (1 - p^2)} \left[-16(1 - 3p^2)(1 - p^2)\pi - \right. \\ \left. - \{ (14432 - 22432p^2 + 8660p^4 - 525p^6) + 30(68 - 35p^2)(1 - p^2) \int (1 - p^2) \} F'(p) + \right. \\ \left. + \left\{ 2(6064 - 7032p^2 + 1175p^4) - \frac{15}{2}(112 - 156p^2 + 35p^4) \int (1 - p^2) \right\} E'(p) \right].$$

$$10) \int \int (1 - p^2 \cos^2 x) \frac{\sin^5 x \cdot \cos x}{\sqrt{1 - p^2 \cos^2 x}} x dx = \frac{1}{225 p^8} \left[- (184 + 32p^2 + 9p^4)\pi + \right. \\ \left. + \left\{ 2(322 - 22p^2 - 15p^4) + \frac{15}{2}(14 + p^2) \int (1 - p^2) \right\} F'(p) - \left\{ 2(138 + 31p^2) + \right. \right. \\ \left. \left. + 15(3 + p^2) \int (1 - p^2) \right\} E'(p) \right].$$

$$11) \int \int (1 - p^2 \cos^2 x) \frac{\sin^5 x \cdot \cos^3 x}{\sqrt{1 - p^2 \cos^2 x}} x dx = \frac{1}{225 p^8} \left[8(1 + p^2)(23 - 12p^2)\pi + \right. \\ \left. + \left\{ (2144 - 1394p^2 + 45p^4) + \frac{15}{2}(44 - 29p^2) \int (1 - p^2) \right\} F'(p) + \right. \\ \left. + \left\{ -2(683 - 69p^2) + \frac{15}{2}(4 + 3p^2) \int (1 - p^2) \right\} E'(p) \right].$$

$$12) \int \int (1 - p^2 \cos^2 x) \frac{\sin^5 x \cdot \cos^5 x}{\sqrt{1 - p^2 \cos^2 x}} x dx = \frac{1}{675 p^{10}} \left[8(2 - 75p^2 + 6p^4)\pi + \right. \\ \left. + \left\{ 2(7216 - 7216p^2 + 1455p^4) + \frac{15}{2}(272 - 272p^2 + 45p^4) \int (1 - p^2) \right\} F'(p) - \right. \\ \left. - 4(2 - p^2) \left\{ 1516 + 105 \int (1 - p^2) \right\} E'(p) \right].$$

$$13) \int \int (1 - p^2 \cos^2 x) \frac{\sin^7 x \cdot \cos x}{\sqrt{1 - p^2 \cos^2 x}} x dx = \frac{1}{225 p^8} \left[- (184 + 272p^2 - 64p^4 + 9p^6)\pi - \right. \\ \left. - \left\{ (2144 - 2038p^2 + 89p^4 + 30p^6) + \frac{15}{2}(44 + p^2)(1 - p^2) \int (1 - p^2) \right\} F'(p) + \right. \\ \left. + \left\{ 2(688 - 207p^2 + 31p^4) - \frac{15}{2}(4 + 9p^2 + 2p^4) \int (1 - p^2) \right\} E'(p) \right].$$

$$14) \int \int (1 - p^2 \cos^2 x) \frac{\sin^7 x \cdot \cos^3 x}{\sqrt{1 - p^2 \cos^2 x}} x dx = \frac{1}{675 p^{10}} \left[-8(69 + 31p^2 + 39p^4 - 6p^6)\pi - \right. \\ \left. - \{ 14432 - 20564p^2 + 7092p^4 - 135p^6 \} + 30(68 - 33p^2)(1 - p^2) \int (1 - p^2) \} F'(p) + \right. \\ \left. + \left\{ 2(6064 - 5096p^2 + 207p^4) + \frac{15}{2}(112 - 44p^2 + 9p^4) \int (1 - p^2) \right\} E'(p) \right].$$

F. Alg. rat. ent.;

Logar. $\int (1-p^2 \cos^2 x)$;

TABLE 429, suite.

Lim. 0 et $\frac{\pi}{2}$.

Circ. Dir. en dén. $\sqrt{1-p^2 \cos^2 x}$; [$p^2 < 1$].

$$15) \int \int (1-p^2 \cos^2 x) \frac{\sin^2 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} x dx = \frac{1}{675 p^{10}} \left[(552 - 304 p^2 - 584 p^4 + 144 p^6 - 27 p^8) \pi + \right. \\ \left. + \left\{ 2(7216 - 13648 p^2 + 6603 p^4 - 201 p^6 - 45 p^8) + \frac{15}{2} (272 - 264 p^2 - 3 p^4) (1-p^4) \right. \right. \\ \left. \left. \int (1-p^2) \right\} F'(p) - \left\{ 2(6064 - 7160 p^2 + 828 p^4 - 93 p^6) + 30(56 - 18 p^2 - 18 p^4 - 3 p^6) \right. \right. \\ \left. \left. \int (1-p^2) \right\} E'(p) \right].$$

Sur 1) à 15) voyez M, D. 16, 28.

F. Alg. rat. ent.;

Logar. d'autre forme;

TABLE 430.

Lim. 0 et $\frac{\pi}{2}$.

Circul. Directe.

$$1) \int \int \sin x \cdot x^{p-1} dx = -\frac{1}{p} \left(\frac{\pi}{2} \right)^p \left\{ 1 - \sum_{n=1}^{\infty} \frac{2}{p+2n} \sum_{m=1}^{\infty} \frac{1}{(4n^2)^m} \right\} \text{ V. T. 205, N. 7.}$$

$$2) \int \int (1 - \cos x) \cdot x^{p-1} dx = \frac{1}{2p} \left(\frac{\pi}{2} \right)^p \left\{ 12 + 2 - \sum_{n=1}^{\infty} \frac{4}{p+2n} \sum_{m=1}^{\infty} \frac{1}{(4n^2)^m} \right\} \text{ V. T. 204, N. 6.}$$

$$3) \int \int \sin x \frac{x dx}{\operatorname{Tg} x} = -\frac{\pi}{4} \left\{ (12)^1 + \frac{1}{12} \pi^2 \right\} \text{ V. T. 305, N. 19.}$$

$$4) \int \int \operatorname{Tg} x \frac{\sin^2 x \cdot \operatorname{Tg} x}{p^2 \cos^4 x - q^4 \sin^4 x} x dx = \frac{\pi}{32 p^2 q^2} \int \frac{q^4}{(p+q)^2 (p^2+q^2)} \text{ V. T. 208, N. 18.}$$

$$5) \int \left\{ \frac{p \int (1+p \sin^2 x)}{1-p^2 \sin^2 x} + \frac{2}{1+p \sin^2 x} \right\} \frac{\sin 2x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{p} \int \left(\frac{\sqrt{p}}{2(1+p)} \right) \cdot F'(p) + \\ + \frac{\pi}{4p} F' \{ \sqrt{1-p^2} \} + \frac{\pi}{p \sqrt{1-p^2}} \int (1+p) \text{ V. T. 325, N. 4.}$$

$$6) \int \left\{ \frac{p \int (1-p \sin^2 x)}{1-p^2 \sin^2 x} - \frac{2}{1-p \sin^2 x} \right\} \frac{\sin 2x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{p} \int \left(\frac{\sqrt{p}}{2(1-p)} \right) \cdot F'(p) + \\ + \frac{\pi}{4p} F' \{ \sqrt{1-p^2} \} + \frac{\pi}{p \sqrt{1-p^2}} \int (1-p) \text{ V. T. 325, N. 5.}$$

$$7) \int \left\{ \frac{\int (1-p^2 \sin^2 \lambda \cdot \sin^2 x)}{1-p^2 \sin^2 x} - \frac{2 \sin^2 \lambda}{1-p^2 \sin^2 \lambda \cdot \sin^2 x} \right\} \frac{\sin 2x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{p^2} \left\{ 4 F'(p) T(p, \lambda) - \right. \\ \left. - 2 E'(p) \cdot \{ F(p, \lambda) \}^2 + \frac{\pi}{\sqrt{1-p^2}} \int (1-p^2 \sin^2 \lambda) \right\} \text{ V. T. 325, N. 9.}$$

F. Alg. rat. ent.;

Logar. d'autre forme;

TABLE 430, suite.

Lim. 0 et $\frac{\pi}{2}$.

Circul. Directe.

$$8) \int \left\{ \frac{l(1-p^2 \sin^2 x)}{1-p^2 \sin^2 x} - \frac{4 \sin^2 x}{1-p^2 \sin^2 x} \right\} \frac{\sin 2x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{p^2} l \left(\frac{p}{4(1-p^2)} \right) \cdot F'(p) + \\ + \frac{\pi}{2p^2} F' \{ \sqrt{1-p^2} \} + \frac{\pi}{p^2 \sqrt{1-p^2}} l(1-p^2) \quad \text{V. T. 325, N. 10.}$$

$$9) \int \left\{ l \left(\frac{1-q \sqrt{1-p^2 \sin^2 x}}{1+q \sqrt{1-p^2 \sin^2 x}} \right) + \frac{2q(1-p^2 \sin^2 x)}{1-q^2+p^2 q^2 \sin^2 x} \right\} \frac{\sin 2x}{\sqrt{1-p^2 \sin^2 x}} x dx = \\ = \frac{2\pi}{p^2} F \{ \sqrt{1-p^2}, \text{Arcsin } q \} + \frac{\pi}{p^2 \sqrt{1-p^2}} l \frac{1-q \sqrt{1-p^2}}{1+q \sqrt{1-p^2}} \quad \text{V. T. 325, N. 11.}$$

$$10) \int \{ 1+p^2 \sin^2 x \cdot (l \sin x - 1) \} \frac{\cot x}{\sqrt{1-p^2 \sin^2 x}} x dx = \frac{1}{2} F'(p) \cdot lp + \frac{\pi}{4} F' \{ \sqrt{1-p^2} \} \\ \text{V. T. 322, N. 3.}$$

$$11) \int \frac{\cos^2 x + 2 \sin^2 x \cdot l \sin x}{(l \operatorname{Cosec} x)^2} \frac{x dx}{\sin x} = 2 \sqrt{\pi} - \pi \sqrt{2} \quad \text{V. T. 329, N. 3.}$$

$$12) \int \frac{\sin x}{l \cos x} x dx = - \sum_0^{\infty} \frac{1^{n/2}}{2^{n/2}} \frac{l(2n+2)}{2n+1} \quad (\text{VIII, 543}).$$

$$13) \int \frac{\sin x}{l \cos x} x^2 dx = - \sum_1^{\infty} \frac{2^{n/2}}{3^{n/2}} \frac{l(2n+1)}{n} \quad (\text{VIII, 543}).$$

F. Alg. rat.;

Logarithm. de $\left\{ \begin{array}{l} \text{Dén. } w^2 + (l \cos w)^2. \text{ TABLE 431.} \end{array} \right.$

Lim. 0 et $\frac{\pi}{2}$.

Circul. Directe.

$$1) \int \frac{Tg x}{x^2 + (l \cos x)^2} x dx = \frac{\pi}{2 l^2} \quad \text{V. T. 431, N. 5.}$$

$$2) \int \frac{l \cos x}{x^2 + (l \cos x)^2} dx = \frac{\pi}{2} \left(1 - \frac{1}{l^2} \right) \quad \text{V. T. 431, N. 4.}$$

$$3) \int \frac{\cos 2ax \cdot l \cos x + x \sin 2ax}{x^2 + (l \cos x)^2} dx = \frac{1}{2} \pi \quad (\text{IV, 531}).$$

$$4) \int \frac{\cos(p Tg x) \cdot l \cos x + x \sin(p Tg x)}{x^2 + (l \cos x)^2} dx = \frac{\pi}{2} \left(1 - \frac{e^{-p}}{l^2} \right) \quad \text{V. T. 485, N. 2.}$$

$$5) \int \frac{\sin(p Tg x) \cdot l \cos x - x \cos(p Tg x)}{x^2 + (l \cos x)^2} Tg x dx = - \frac{\pi}{2 l^2} e^{-p} \quad \text{V. T. 485, N. 3.}$$

$$6) \int \frac{l \cos x}{x^2 + (l \cos x)^2} \frac{dx}{1 + \cos 2x} = \infty \quad \text{V. T. 431, N. 10.}$$

$$7) \int \frac{l \cos x}{x^2 + (l \cos x)^2} \frac{dx}{1 - \cos 2x} = \frac{\pi}{4} \quad \text{V. T. 431, N. 10.}$$

F. Alg. rat.;

Logarithm. de } Dén. $x^2 + (l \cos x)^2$. TABLE 431, suite.
Circul. Directe.

Lim. 0 et $\frac{\pi}{2}$.

$$8) \int \frac{\sin 2x}{x^2 + (l \cos x)^2} \frac{x dx}{1 - \cos 2x} = \infty \text{ V. T. 431, N. 11.}$$

$$9) \int \frac{\sin 2x}{x^2 + (l \cos x)^2} \frac{x dx}{1 + \cos 2x} = \frac{\pi}{2l2} \text{ V. T. 431, N. 11.}$$

$$10) \int \frac{l \cos x}{x^2 + (l \cos x)^2} \frac{dx}{1 - 2p \cos 2x + p^2} = \frac{1}{2} \frac{\pi}{p^2 - 1} \left\{ \frac{1}{l2 - l(1+p)} - \frac{1+p}{1-p} \right\} [p^2 \leq 1], =$$

$$= \frac{1}{2} \frac{\pi}{p^2 - 1} \left\{ \frac{p+1}{p-1} - \frac{1}{l(2p) - l(1+p)} \right\} [p^2 > 1] \text{ (IV, 531).}$$

$$11) \int \frac{\sin 2x}{x^2 + (l \cos x)^2} \frac{x dx}{1 - 2p \cos 2x + p^2} = \frac{\pi}{4p} \left\{ \frac{1}{l2 - l(1+p)} - \frac{1}{l2} \right\} [p^2 \leq 1], =$$

$$= \frac{\pi}{p} \left\{ \frac{1}{l2} - \frac{1}{l(1+p) - l2p} \right\} [p^2 > 1] \text{ (IV, 532).}$$

$$12) \int \frac{\sin 2x \cdot l \cos x}{1 - 2p \cos 2x + p^2} x dx = \frac{\pi}{8p} l(1+p).$$

$$13) \int \frac{\sin qrx \cdot l \cos x - x \cos qrx}{x^2 + (l \cos x)^2} \frac{\cos^{r-1} x \cdot \sin x}{1 - 2p \cos 2x + p^2} dx = \frac{\pi}{2pl} \frac{1+p}{2} \left(\frac{1+p^2}{2} \right)^r + \frac{\pi}{p2^{r+1}l2}$$

$$14) \int \frac{\sin 2x \cdot l \cos x}{\{x^2 + (l \cos x)^2\}^2} \frac{x dx}{1 - 2p \cos 2x + p^2} = \frac{\pi}{8p(l2)^2} - \frac{\pi}{8p \left\{ l \frac{2}{1+p} \right\}^2} + \frac{\pi}{2(1-p)^2}.$$

$$16) \int \frac{Tgx \cdot l \cos x}{\{x^2 + (l \cos x)^2\}^2} x dx = \frac{\pi}{4} \left(1 - \frac{1}{(l2)^2} \right). \quad 15) \int \frac{\sin 2x \cdot l \cos x}{\{x^2 + (l \cos x)^2\}^2} x dx = \frac{\pi}{2} \left(1 - \frac{1}{2(l2)^2} \right).$$

$$17) \int \frac{\sin 4x \cdot l \cos x}{\{x^2 + (l \cos x)^2\}^2} x dx = \pi \left(1 - \frac{3 - l2}{8(l2)^2} \right).$$

Sur 11) à 16) voyez Svanberg, N. A. Ups. 10, 231.

$$18) \int \frac{(l \cos x)^2 + 2x Tgx \cdot l \cos x - x^2}{\{x^2 + (l \cos x)^2\}^2} l \cos x dx = \frac{\pi}{2l2} \text{ V. T. 431, N. 1.}$$

$$19) \int \frac{(l \cos x)^2 - 2x \cot x \cdot l \cos x - x^2}{\{x^2 + (l \cos x)^2\}^2} x Tgx dx = \pi \frac{1 - l2}{2l2} \text{ V. T. 431, N. 2.}$$

F. Algèbr. rat.;

Logarithmique de
Circulaire Directe.

TABLE 432.

Lim. 0 et π .

$$1) \int l \sin x \cdot x dx = -\frac{1}{2} \pi^2 l2 \text{ (VIII, 257).} \quad 2) \int l \cos^2 x \cdot x dx = -\pi^2 l2 \text{ (VIII, 257).}$$

$$3) \int l Tg^2 x \cdot x dx = 0 \text{ (VIII, 257).} \quad 4) \int l((\sin x)) \cdot x dx = -\frac{1}{2} \pi^2 l2 + \alpha \pi^2 i \text{ (VIII, 258).}$$

$$5) \int l((- \sin x)) \cdot x \, dx = -\frac{1}{2} \pi^2 l 2 + \frac{2a+1}{2} \pi^2 i \text{ (VIII, 258).}$$

$$6) \int l \sin x \cdot (3\pi - 2x) x^a \, dx = -\pi^2 l 4 \text{ (VIII, 258).}$$

$$7) \int l(1 - 2p \cos 2x + p^2) \cdot \sin \{(2a-1)x\} \cdot x^{2b+1} \, dx = 0 \text{ (IV, 532).}$$

$$8) \int l(1 - 2p \cos 2x + p^2) \cdot \cos \{(2a-1)x\} \cdot x^{2b} \, dx = 0 \text{ (IV, 532).}$$

$$9) \int l(1 - 2p \cos 2x + p^2) \cdot \sin 2ax \cdot \sin x \cdot x^{2b} \, dx = 0 \text{ V. T. 432, N. 8.}$$

$$10) \int l(1 - 2p \cos 2x + p^2) \cdot \sin 2ax \cdot \cos x \cdot x^{2b+1} \, dx = 0 \text{ V. T. 432, N. 7.}$$

$$11) \int l(1 - 2p \cos 2x + p^2) \cdot \cos 2ax \cdot \sin x \cdot x^{2b+1} \, dx = 0 \text{ V. T. 432, N. 7.}$$

$$12) \int l(1 - 2p \cos 2x + p^2) \cdot \cos 2ax \cdot \cos x \cdot x^{2b} \, dx = 0 \text{ V. T. 432, N. 8.}$$

$$13) \int l(1 - 2r \cos x + r^2) \cdot \sin ax \cdot x^{2b+1} \, dx = \frac{(-1)^{b+1} \pi r^a}{a^{2b+3}} l^{2b+1/1} \sum_0^{2b-1} \frac{(-a l r)^n}{l^{n/1}} \text{ (IV, 533).}$$

$$14) \int l(1 - 2r \cos x + r^2) \cdot \cos ax \cdot x^{2b} \, dx = \frac{(-1)^{b+1} \pi r^a}{a^{2b+1}} l^{2b/1} \sum_0^{2b} \frac{(-a l r)^n}{l^{n/1}} \text{ (IV, 533).}$$

[Dans 7) à 10) on a $0 < p < 1, r^2 < 1$].

$$1) \int_0^{2a\pi} l((\sin x)) \cdot x \, dx = -2a^2 \pi^2 l 2 + a \left\{ (4a+1)a + \frac{1}{2} \right\} \pi^2 i \text{ (VIII, 282).}$$

$$2) \int_0^{(2a+1)\pi} l((\sin x)) \cdot x \, dx = -\frac{(2a+1)^2}{2} \pi^2 l 2 + \frac{1}{4} (2a+1) \{ (2a+1)(4a+1) - 1 \} \pi^2 i \text{ (VIII, 282).}$$

$$3) \int_0^{2a\pi} l((\cos x)) \cdot x \, dx = -2a^2 \pi^2 l 2 - a \left(4a + \frac{1}{4} \right) \pi^2 i \text{ (VIII, 283).}$$

$$4) \int_0^{(2a+1)\pi} l((\cos x)) \cdot x \, dx = -\frac{(2a+1)^2}{2} \pi^2 l 2 - \frac{2a+1}{4} \left\{ (2a+1)4a - \frac{3}{2} \right\} \pi^2 i \text{ (VIII, 283).}$$

F. Algèbr.;

Logarithmique;

TABLE 433, suite.

Lim. diverses.

Circulaire Directe.

$$5) \int_{\frac{\pi}{2}}^{(2a+\frac{1}{2})\pi} l((\sin x)) \cdot x dx = -(2a+1)a\pi^2/2 - a \left\{ (2a+1)2a + \frac{1}{4} \right\} \pi^3 i \text{ (VIII, 284).}$$

$$6) \int_{\frac{\pi}{2}}^{(2a-\frac{1}{2})\pi} l((\sin x)) \cdot x dx = -(2a-1)a\pi^2/2 - \frac{1}{4} \left\{ (2a-1)8a - 3a + \frac{1}{2} \right\} \pi^3 i \text{ (VIII, 284).}$$

$$7) \int_0^{2a\pi} l(1+2p \cos x + p^2) \cdot x^b dx = \sum_0^{b-1} \left\{ 1^{n/1} \binom{b}{n} (2a\pi)^{b-n} \cos\left(\frac{n+1}{2}\pi\right) \cdot \sum_1^{\infty} \frac{p^m}{m^{n+2}} \right\} [p^2 < 1] \text{ (IV, 541).}$$

$$8) \int_0^{\lambda} \left\{ 2x + l\left(\frac{1+\sin x}{1-\sin x}\right) \right\} \frac{dx}{\sqrt{(\cos^2 x - \cos^2 \lambda)(1 - \cos^2 \lambda \cdot \cos^2 x)}} = \pi \operatorname{Cosec} \phi \cdot F(p, \phi) \text{ (IV, 541).}$$

$$9) \int_0^{\lambda} \left\{ 2x \cos x - l\left(\frac{1+\sin x}{1-\sin x}\right) \right\} \frac{\cos x}{\sin^2 x \cdot \sqrt{(\cos^2 x - \cos^2 \lambda)(1 - \cos^2 \lambda \cdot \cos^2 x)}} dx = \\ = \frac{\pi \cos^2 \lambda}{\sin \lambda \cdot \sin \phi} F(p, \phi) - \frac{\pi \sin \phi}{\sin^4 \lambda} E(p, \phi) + \frac{\pi \cos \lambda}{\sin^2 \lambda} \text{ (IV, 541).}$$

[Dans 8) et 9) on a $\cos \phi = \cos^2 \lambda$, $p = \sin \lambda \cdot \operatorname{Cosec} \phi$].

F. Alg.;

Logarithm.;

Circul. Directe.

Intégr. Lim. [Lim. $k = \infty$]. TABLE 434.

Lim. diverses.

$$1) \int_0^{\infty} l \sin kx \frac{dx}{p^2 + x^2} = -\frac{\pi}{2p} l2 \text{ (VIII, 380).}$$

$$2) \int_0^{\infty} l \cos kx \frac{dx}{p^2 + x^2} = -\frac{\pi}{2p} l2 \text{ (VIII, 380).} \quad 3) \int_0^{\infty} l \operatorname{Tg} kx \frac{dx}{p^2 + x^2} = 0 \text{ V. T. 434, N. 1, 2.}$$

$$4) \int_0^{\frac{\pi}{2}} \frac{\cos^k x}{x^2 + (l \cos x)^2} \frac{x \sin kx + \cos kx \cdot l \cos x}{1 - 2p \cos 2x + p^2} dx = \frac{\pi}{2(1-p)^2} [p^2 < 1] \text{ IV, 532).}$$

$$5) \int_0^{\frac{\pi}{2}} \frac{\cos^k x \cdot \sin 2x}{x^2 + (l \cos x)^2} \frac{\sin kx \cdot l \cos x - x \cos kx}{1 - 2p \cos 2x + p^2} dx = 0 [p^2 < 1] \text{ (IV, 532).}$$

F. Algèbr. rat.;

Logarithmique en num.;

TABLE 435.

Lim. 0 et 1.

Circulaire Inverse.

$$1) \int \operatorname{Arcsin} x \cdot (2alx + 1)x^{2a-1} dx = \frac{3^{a-1/2}}{2^{a/2}} \frac{\pi}{2} \left(l2 + \sum_1^{2a} \frac{(-1)^n}{n} \right) \text{ V. T. 118, N. 5.}$$

$$2) \int \operatorname{Arcsin} x \cdot \{(2a+1)lx + 1\} x^{2a} dx = \frac{2^{a+1}}{1^{a+1/2}} \left(l2 + \sum_1^{2a+1} \frac{(-1)^n}{n} \right) \text{ V. T. 118, N. 6.}$$

$$3) \int \operatorname{Arcsin} x \cdot l x \frac{dx}{x} = -\frac{\pi}{4} \left\{ (l2)^2 + \frac{1}{12} \pi^2 \right\} \text{ V. T. 118, N. 13.}$$

$$4) \int \operatorname{Arcsin} x \cdot l(1+qx^2) \cdot x dx = \frac{\pi}{4} \left\{ \frac{q+2}{q} l \frac{2(1+q)}{1+\sqrt{1+q}} - \frac{\sqrt{1+q}}{1+\sqrt{1+q}} \right\} [q^2 < 1]$$

V. T. 120, N. 7, T. 229, N. 2 et T. 231, N. 1.

$$5) \int \operatorname{Arcsin} x \cdot l(px+1) \frac{dx}{x^2} = \frac{1}{8} \pi^2 - \frac{1}{2} (\operatorname{Arccos} p)^2 - \frac{\pi}{2} l(1+p) + \frac{1}{2} p \pi \cdot l \frac{1+\sqrt{1+p}}{\sqrt{1+p}}$$

V. T. 120, N. 2 et T. 235, N. 10.

$$6) \int \operatorname{Arcsin} x \cdot l \left(\frac{1+qx}{1-qx} \right) \frac{dx}{x^2} = \frac{\pi}{2} l \left(\frac{1-q}{1+q} \right) + \pi q l \frac{1+\sqrt{1-q^2}}{\sqrt{1-q^2}} + \pi \operatorname{Arcsin} q$$

V. T. 122, N. 2 et T. 235, N. 10.

$$7) \int \operatorname{Arcsin} x \cdot \left\{ \frac{1+qx^2}{(1-qx^2)^2} l \left(\frac{1+px}{1-px} \right) + \frac{2p}{1-x^2} \frac{x}{1-p^2x^2} \right\} dx = \frac{\pi}{2(1-q)} l \frac{1+p}{1-p} +$$

$$+ \frac{\pi}{\sqrt{q(1-q)}} l \frac{p\sqrt{q} - \{1-\sqrt{1-q}\} \{1-\sqrt{1-p^2}\}}{p\sqrt{q} + \{1-\sqrt{1-q}\} \{1-\sqrt{1-p^2}\}} \text{ V. T. 122, N. 8.}$$

$$8) \int \operatorname{Arccos} x \cdot \left\{ \frac{1+qx^2}{(1-qx^2)^2} l \left(\frac{1+px}{1-px} \right) + \frac{2p}{1-qx^2} \frac{x}{1-p^2x^2} \right\} dx =$$

$$= \frac{\pi}{\sqrt{q(1-q)}} l \frac{p\sqrt{q} + \{1-\sqrt{1-q}\} \{1-\sqrt{1-p^2}\}}{p\sqrt{q} - \{1-\sqrt{1-q}\} \{1-\sqrt{1-p^2}\}} \text{ V. T. 122, N. 8.}$$

$$9) \int \operatorname{Arccos} x \cdot \{1+2alx\} x^{2a-1} dx = \frac{3^{a-1/2}}{2^{a/2}} \frac{\pi}{2} \left(-l2 + \sum_1^{2a} \frac{(-1)^{n-1}}{n} \right) \text{ V. T. 118, N. 5.}$$

$$10) \int \operatorname{Arccos} x \cdot \{1+(2a+1)lx\} x^{2a} dx = \frac{2^{a/2}}{1^{a+1/2}} \left(-l2 + \sum_1^{2a+1} \frac{(-1)^{n-1}}{n} \right) \text{ V. T. 118, N. 6.}$$

$$11) \int \operatorname{Arccos} x \cdot l(1+qx^2) \cdot x dx = \frac{\pi}{4} \left\{ \frac{q+2}{q} l \frac{1+\sqrt{1+q}}{2} - \frac{\sqrt{1+q}}{1+\sqrt{1+q}} \right\} [q^2 < 1]$$

V. T. 120, N. 7, T. 229, N. 5 et T. 231, N. 12.

$$12) \int \operatorname{Arctg} x \cdot l x \frac{dx}{x} = -\frac{1}{32} \pi^2 \text{ V. T. 109, N. 3.}$$

$$13) \int \operatorname{Arctg} x \cdot (lx)^2 \frac{dx}{x} = -\frac{5}{256} \pi^2 \text{ V. T. 109, N. 17.}$$

$$14) \int \operatorname{Arctg} x \cdot (lx)^2 \frac{dx}{x} = -\frac{61}{1536} \pi^2 \text{ V. T. 109, N. 25.}$$

F. Algèbr. rat.;

Logarithmique en num.; TABLE 435, suite.

Lim. 0 et 1.

Circulaire Inverse.

$$15) \int \text{Arctg } x \cdot (lx)^{q-1} \frac{dx}{x} = \frac{1}{q} \cos q\pi \cdot \Gamma(q+1) \sum_1^{\infty} \frac{(-1)^{n+1}}{(2n+1)^{q+1}} \quad \text{V. T. 110, N. 11.}$$

$$16) \int \frac{\text{Arctg}(lx)}{1-x^p} \frac{dx}{x} = \frac{1}{2p} \left\{ 2\pi l \Gamma\left(\frac{p}{2\pi} + 1\right) - \pi lp + p \left(1 - l \frac{p}{2\pi}\right) \right\} \quad \text{V. T. 282, N. 3.}$$

$$17) \int l(1+x) \cdot \left(\text{Arctg } x + \frac{x}{1+x^2} \right) dx = \frac{1}{2} l2 - \frac{\pi}{4} + \frac{3\pi}{8} l2.$$

$$18) \int l(1-x) \cdot \left(\text{Arctg } x + \frac{x}{1+x^2} \right) dx = \frac{1}{2} l2 - \frac{\pi}{4} + \frac{\pi}{8} l2 + \sum_0^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2}.$$

$$19) \int l(1+x^2) \cdot \left(\text{Arctg } x + \frac{x}{1+x^2} \right) dx = l2 + \frac{1}{16} \pi^2 - \frac{\pi}{2} + \frac{\pi}{4} l2.$$

$$20) \int l(1-x^2) \cdot \left(\text{Arctg } x + \frac{x}{1+x^2} \right) dx = l2 - \frac{\pi}{2} + \frac{\pi}{2} l2 + \sum_0^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2}.$$

$$21) \int l(1-x^4) \cdot \left(\text{Arctg } x + \frac{x}{1+x^2} \right) dx = 2l2 + \frac{1}{16} \pi^2 - \pi + \frac{3\pi}{4} l2 + \sum_0^{\infty} \frac{(-1)^{n-1}}{(2n+1)^2}.$$

Sur 17) à 21) voyez M, II, D. 1.

F. Alg. irrat. à dén. $\sqrt{1-p^2 x^2}$;

Logar. en num. $l(1-p^2 x^2)$; TABLE 436.

Lim. 0 et 1.

Circ. Inverse $\text{Arcsin } x$; $[p^2 < 1]$.

$$1) \int \text{Arcsin } x \cdot l(1-p^2 x^2) \frac{x dx}{\sqrt{1-p^2 x^2}} = \frac{1}{p^2} \left[\left\{ 1 - \frac{1}{2} l(1-p^2) \right\} \pi \sqrt{1-p^2} + (2-p^2) F'(p) - \left\{ 4 - \frac{1}{2} l(1-p^2) \right\} E'(p) \right] \quad \text{V. T. 426, N. 3.}$$

$$2) \int \text{Arcsin } x \cdot l(1-p^2 x^2) \frac{x^3 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{27 p^4} \left[2 \left\{ (8+p^2) - \frac{3}{2} (2+p^2) l(1-p^2) \right\} \pi \sqrt{1-p^2} + \left\{ (32-5p^2-6p^4) + \frac{3}{2} (1-p^2) l(1-p^2) \right\} F'(p) - \left\{ 2(40+7p^2) - \frac{3}{2} (5+2p^2) l(1-p^2) \right\} E'(p) \right] \quad \text{V. T. 426, N. 5.}$$

$$3) \int \text{Arcsin } x \cdot l(1-p^2 x^2) \frac{x dx}{\sqrt{1-p^2 x^2}} = \frac{1}{p^2} \left[\left\{ 1 + \frac{1}{2} l(1-p^2) \right\} \frac{\pi}{\sqrt{1-p^2}} - \left\{ 2 + \frac{1}{2} l(1-p^2) \right\} F'(p) \right] \quad \text{V. T. 426, N. 9.}$$

F. Alg. irrat. à dén. $\sqrt{1-p^2 x^2}$;

Logar. en num. $\mathcal{L}(1-p^2 x^2)$; TABLE 436, suite.

Lim. 0 et 1.

Circ. Inverse $\text{Arcsin } x$; [$p^2 < 1$].

$$4) \int \text{Arcsin } x \cdot \mathcal{L}(1-p^2 x^2) \frac{x^3 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{p^4} \left[\left\{ p^2 + \frac{1}{2} (2-p^2) \mathcal{L}(1-p^2) \right\} \frac{\pi}{\sqrt{1-p^2}} - \right. \\ \left. - \left\{ (4-p^2) + \frac{1}{2} \mathcal{L}(1-p^2) \right\} F'(p) + \left\{ 4 - \frac{1}{2} \mathcal{L}(1-p^2) \right\} E'(p) \right] \text{ V. T. 426, N. 12.}$$

$$5) \int \text{Arcsin } x \cdot \mathcal{L}(1-p^2 x^2) \frac{x^5 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{27 p^6} \left[3 \left\{ (8-16p^2-p^4) + \right. \right. \\ \left. \left. + \frac{3}{2} (8-4p^2-p^4) \mathcal{L}(1-p^2) \right\} \frac{\pi}{\sqrt{1-p^2}} - \left\{ 2(10-16p^2-3p^4) + \right. \right. \\ \left. \left. + \frac{3}{2} (10-p^2) \mathcal{L}(1-p^2) \right\} F'(p) + \left\{ 2(94+7p^2) - 3(7+p^2) \mathcal{L}(1-p^2) \right\} E'(p) \right] \\ \text{V. T. 426, N. 14.}$$

$$6) \int \text{Arcsin } x \cdot \mathcal{L}(1-p^2 x^2) \frac{x dx}{\sqrt{1-p^2 x^2}} = \frac{1}{9 p^2 (1-p^2)} \left[\left\{ 1 + \frac{3}{2} \mathcal{L}(1-p^2) \right\} \frac{\pi}{\sqrt{1-p^2}} + \right. \\ \left. + 3(2-p^2) F'(p) - \left\{ 8 + \frac{3}{2} \mathcal{L}(1-p^2) \right\} E'(p) \right] \text{ V. T. 427, N. 1.}$$

$$7) \int \text{Arcsin } x \cdot \mathcal{L}(1-p^2 x^2) \frac{x^3 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{9 p^4 (1-p^2)} \left[- \left\{ (8-9p^2) + \right. \right. \\ \left. \left. + \frac{3}{2} (2-3p^2) \mathcal{L}(1-p^2) \right\} \frac{\pi}{\sqrt{1-p^2}} + 3 \left\{ (8-7p^2) + \frac{3}{2} (1-p^2) \mathcal{L}(1-p^2) \right\} F'(p) - \right. \\ \left. - \left\{ 8 + \frac{3}{2} \mathcal{L}(1-p^2) \right\} E'(p) \right] \text{ V. T. 427, N. 5.}$$

$$8) \int \text{Arcsin } x \cdot \mathcal{L}(1-p^2 x^2) \frac{x^5 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{9 p^6 (1-p^2)} \left[- \left\{ (8-9p^2) + \right. \right. \\ \left. \left. + \frac{3}{2} (8-12p^2+3p^4) \mathcal{L}(1-p^2) \right\} \frac{\pi}{\sqrt{1-p^2}} + 3 \left\{ (20-22p^2+3p^4) + \right. \right. \\ \left. \left. + 3(1-p^2) \mathcal{L}(1-p^2) \right\} F'(p) + \left\{ -4(11-9p^2) + \frac{3}{2} (2-3p^2) \mathcal{L}(1-p^2) \right\} E'(p) \right] \\ \text{V. T. 427, N. 8.}$$

$$9) \int \text{Arcsin } x \cdot \mathcal{L}(1-p^2 x^2) \frac{x^7 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{27 p^8 (1-p^2)} \left[-3 \left\{ p^2 (24-24p^2-p^4) + \right. \right. \\ \left. \left. + \frac{3}{2} (16-24p^2+6p^4+p^6) \mathcal{L}(1-p^2) \right\} \frac{\pi}{\sqrt{1-p^2}} + \left\{ (320-370p^2+53p^4+6p^6) + \right. \right. \\ \left. \left. + \frac{3}{2} (28-p^2)(1-p^2) \mathcal{L}(1-p^2) \right\} F'(p) + \left\{ -2(160-141p^2-7p^4) + \right. \right. \\ \left. \left. + \frac{3}{2} (20-21p^2-2p^4) \mathcal{L}(1-p^2) \right\} E'(p) \right] \text{ V. T. 427, N. 10.}$$

F. Alg. irrat. à dén. $\sqrt{1-p^2 x^2}$;

Logar. en num. $\ln(1-p^2 x^2)$; TABLE 436, suite.

Lim. 0 et 1.

Circ. Inverse $\text{Arcsin } x$; $[p^2 < 1]$.

$$10) \int \text{Arcsin } x \cdot \ln(1-p^2 x^2) \frac{x dx}{\sqrt{1-p^2 x^2}} = \frac{1}{225 p^4 (1-p^2)^2} \left[\left\{ 1 + \frac{5}{2} \ln(1-p^2) \right\} \frac{9\pi}{\sqrt{1-p^2}} + \right. \\ \left. + \left\{ 2(53-53p^2+15p^4) + \frac{15}{2}(1-p^2)\ln(1-p^2) \right\} F'(p) - \right. \\ \left. - (2-p^2) \{ 62 + 15 \ln(1-p^2) \} E'(p) \right] \text{ V. T. 428, N. 1.}$$

$$11) \int \text{Arcsin } x \cdot \ln(1-p^2 x^2) \frac{x^3 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{225 p^4 (1-p^2)^2} \left[- \left\{ (16-25p^2) + \right. \right. \\ \left. + \frac{15}{2}(2-5p^2)\ln(1-p^2) \right\} \frac{\pi}{\sqrt{1-p^2}} + \left\{ -(44-119p^2+45p^4) + \right. \\ \left. + \frac{15}{2}(1-p^2)\ln(1-p^2) \right\} F'(p) + \left\{ 2(38-69p^2) + \frac{15}{2}(1-3p^2)\ln(1-p^2) \right\} E'(p) \right] \\ \text{V. T. 428, N. 6.}$$

$$12) \int \text{Arcsin } x \cdot \ln(1-p^2 x^2) \frac{x^5 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{225 p^6 (1-p^2)^2} \left[\left\{ (184-400p^2+225p^4) + \right. \right. \\ \left. + \frac{15}{2}(8-20p^2+15p^4)\ln(1-p^2) \right\} \frac{\pi}{\sqrt{1-p^2}} - \left\{ 2(322-622p^2+285p^4) + \right. \\ \left. + \frac{15}{2}(14-15p^2)(1-p^2)\ln(1-p^2) \right\} F'(p) + \left\{ 2(138-169p^2) + \right. \\ \left. + 15(3-4p^2)\ln(1-p^2) \right\} E'(p) \right] \text{ V. T. 428, N. 10.}$$

$$13) \int \text{Arcsin } x \cdot \ln(1-p^2 x^2) \frac{x^7 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{225 p^8 (1-p^2)^2} \left[3 \left\{ (128-200p^2+75p^4) + \right. \right. \\ \left. + \frac{15}{2}(16-40p^2-30p^4-5p^6)\ln(1-p^2) \right\} \frac{\pi}{\sqrt{1-p^2}} - \left\{ (2144-4394p^2+2445p^4-225p^6) + \right. \\ \left. + \frac{15}{2}(44-45p^2)(1-p^2)\ln(1-p^2) \right\} F'(p) + \left\{ 2(688-1169p^2+450p^4) - \right. \\ \left. - \frac{15}{2}(4-17p^2+15p^4)\ln(1-p^2) \right\} E'(p) \right] \text{ V. T. 428, N. 13.}$$

$$14) \int \text{Arcsin } x \cdot \ln(1-p^2 x^2) \frac{x^9 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{675 p^{10} (1-p^2)^2} \left[3 \left\{ 384-1200p^2+800p^4+25p^6 \right\} + \right. \\ \left. + \frac{15}{2}(128-320p^2+240p^4-40p^6-5p^8)\ln(1-p^2) \right\} \frac{\pi}{\sqrt{1-p^2}} - \left\{ 2(7216-15216p^2+ \right. \\ \left. + 8955p^4-925p^6-75p^8) + \frac{15}{2}(272-280p^2+5p^4)(1-p^2)\ln(1-p^2) \right\} F'(p) + \\ \left. + \left\{ 2(6064-11032p^2-4700p^4+175p^6) - 15(56-128p^2+70p^4+5p^6)\ln(1-p^2) \right\} E'(p) \right] \\ \text{V. T. 428, N. 15.}$$

F. Alg. irrat. à dén. $\sqrt{1-p^2+p^2x^2}$;

Logar. en num. $\ell(1-p^2+p^2x^2)$; TABLE 437.

Lim. 0 et 1.

Circ. Inverse $\text{Arcsin } x$; [$p^2 < 1$].

$$1) \int \text{Arcsin } x \cdot \ell(1-p^2+p^2x^2) \frac{x dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{p^2} \left[-\pi - (2-p^2)F'(p) + \left\{ 4 - \frac{1}{2}\ell(1-p^2) \right\} E'(p) \right] \text{ V. T. 426, N. 6.}$$

$$2) \int \text{Arcsin } x \cdot \ell(1-p^2+p^2x^2) \frac{x^3 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{27p^4} \left[3(8-9p^2)\pi + \{ (32-59p^2+21p^4) + \frac{3}{2}(1-p^2)\ell(1-p^2) \} F'(p) - \left\{ 2(40-47p^2) - \frac{3}{2}(5-7p^2)\ell(1-p^2) \right\} E'(p) \right] \text{ V. T. 426, N. 8.}$$

$$3) \int \text{Arcsin } x \cdot \ell(1-p^2+p^2x^2) \frac{x dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{p^2} \left[-\pi + \left\{ 2 + \frac{1}{2}\ell(1-p^2) \right\} F'(p) \right] \text{ V. T. 426, N. 15.}$$

$$4) \int \text{Arcsin } x \cdot \ell(1-p^2+p^2x^2) \frac{x^3 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{p^4} \left[-p^2\pi - \{ (4-3p^2) + \frac{1}{2}(1-p^2)\ell(1-p^2) \} F'(p) + \left\{ 4 - \frac{1}{2}\ell(1-p^2) \right\} E'(p) \right] \text{ V. T. 426, N. 18.}$$

$$5) \int \text{Arcsin } x \cdot \ell(1-p^2+p^2x^2) \frac{x^5 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{27p^6} \left[3(8-9p^2)\pi + \left\{ 2(70-124p^2+51p^4) + \frac{3}{2}(10-9p^2)(1-p^2)\ell(1-p^2) \right\} F'(p) + \left\{ -2(94-101p^2) + \frac{3}{2}(7-8p^2)\ell(1-p^2) \right\} E'(p) \right] \text{ V. T. 426, N. 20.}$$

$$6) \int \text{Arcsin } x \cdot \ell(1-p^2+p^2x^2) \frac{x dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{9p^2(1-p^2)} \left[-(1-p^2)\pi - 3(2-p^2)F'(p) + \left\{ 8 + \frac{3}{2}\ell(1-p^2) \right\} E'(p) \right] \text{ V. T. 427, N. 11.}$$

$$7) \int \text{Arcsin } x \cdot \ell(1-p^2+p^2x^2) \frac{x^3 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{9p^4} \left[-(8+p^2)\pi + 3 \left\{ (8-p^2) + \frac{3}{2}\ell(1-p^2) \right\} F'(p) - \left\{ 8 + \frac{3}{2}\ell(1-p^2) \right\} E'(p) \right] \text{ V. T. 427, N. 15.}$$

$$8) \int \text{Arcsin } x \cdot \ell(1-p^2+p^2x^2) \frac{x^5 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{9p^6} \left[(8-16p^2-p^4)\pi - 3 \left\{ (20-18p^2+p^4) + 3(1-p^2)\ell(1-p^2) \right\} F'(p) + \left\{ 4(11-2p^2) - \frac{3}{2}(2+p^2)\ell(1-p^2) \right\} E'(p) \right] \text{ V. T. 427, N. 18.}$$

F. Alg. irrat. à dén. $\sqrt{1-p^2+p^2x^2}$;

Logar. en num. $\ell(1-p^2+p^2x^2)$; TABLE 437, suite.

Lim. 0 et 1.

Circ. Inverse $\text{Arcsin } x$; $[p^2 < 1]$.

$$9) \int \text{Arcsin } x \cdot \ell(1-p^2+p^2x^2) \frac{x^7 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{27p^3} \left[3p^2(40-40p^2-p^4)\pi + \right. \\ \left. + \left\{ (320-590p^2+273p^4-9p^6) + \frac{3}{2}(28-27p^2)(1-p^2)\ell(1-p^2) \right\} F'(p) + \right. \\ \left. + \left\{ -2(160-179p^2+12p^4) + \frac{3}{2}(20-19p^2-3p^4)\ell(1-p^2) \right\} E'(p) \right] \text{ V. T. 427, N. 20.}$$

$$10) \int \text{Arcsin } x \cdot \ell(1-p^2+p^2x^2) \frac{x dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{225p^3(1-p^2)^2} \left[-9(1-p^2)^2\pi - \right. \\ \left. - \left\{ 2(53-53p^2+15p^4) + \frac{15}{2}(1-p^2)\ell(1-p^2) \right\} F'(p) + (2-p^2) \{ 62+15\ell(1-p^2) \} E'(p) \right] \\ \text{V. T. 429, N. 1.}$$

$$11) \int \text{Arcsin } x \cdot \ell(1-p^2+p^2x^2) \frac{x^3 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{225p^4(1-p^2)} \left[-(16+9p^2)(1-p^2)\pi + \right. \\ \left. + \left\{ -(44+31p^2-30p^4) + \frac{15}{2}(1-p^2)\ell(1-p^2) \right\} F'(p) + \left\{ 2(38+31p^2) + \right. \right. \\ \left. \left. + \frac{15}{2}(1+2p^2)\ell(1-p^2) \right\} E'(p) \right] \text{ V. T. 429, N. 6.}$$

$$12) \int \text{Arcsin } x \cdot \ell(1-p^2+p^2x^2) \frac{x^5 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{225p^5} \left[-(184+35p^2+9p^4)\pi + \right. \\ \left. + \left\{ 2(322-22p^2-15p^4) + \frac{15}{2}(14+p^2)\ell(1-p^2) \right\} F'(p) - \left\{ 2(138+31p^2) + \right. \right. \\ \left. \left. + 15(3+p^2)\ell(1-p^2) \right\} E'(p) \right] \text{ V. T. 429, N. 10.}$$

$$13) \int \text{Arcsin } x \cdot \ell(1-p^2+p^2x^2) \frac{x^7 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{225p^3} \left[-(184+272p^2-64p^4+9p^6)\pi - \right. \\ \left. - \left\{ (2144-2038p^2+89p^4+30p^6) + \frac{15}{2}(44+p^2)(1-p^2)\ell(1-p^2) \right\} F'(p) + \right. \\ \left. + \left\{ 2(688-207p^2+31p^4) - \frac{15}{2}(4+9p^2+2p^4)\ell(1-p^2) \right\} E'(p) \right] \\ \text{V. T. 429, N. 13.}$$

$$14) \int \text{Arcsin } x \cdot \ell(1-p^2+p^2x^2) \frac{x^9 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{675p^{10}} \left[(552-304p^2-584p^4 + \right. \\ \left. + 144p^6-27p^8)\pi + \left\{ 2(7216-13648p^2+6603p^4-201p^6-45p^8) + \right. \right. \\ \left. \left. + \frac{15}{2}(272-264p^2-3p^4)(1-p^2)\ell(1-p^2) \right\} F'(p) - \left\{ 2(6064-7160p^2 + \right. \right. \\ \left. \left. + 828p^4-93p^6) + 30(56-18p^2-18p^4-3p^6)\ell(1-p^2) \right\} E'(p) \right] \text{ V. T. 429, N. 15.}$$

F. Alg. irrat. à dén. $\sqrt{1-p^2 x^2}$;

Logar. en num. $\ell(1-p^2 x^2)$; TABLE 438.

Lim. 0 et 1.

Circ. Inverse $\text{Arccos } x$; $[p^2 < 1]$.

$$1) \int \text{Arccos } x \cdot \ell(1-p^2 x^2) \frac{x dx}{\sqrt{1-p^2 x^2}} = \frac{1}{p^2} \left[-\pi - (2-p^2) F(p) + \left\{ 4 - \frac{1}{2} \ell(1-p^2) \right\} E'(p) \right]$$

V. T. 426, N. 6.

$$2) \int \text{Arccos } x \cdot \ell(1-p^2 x^2) \frac{x^2 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{27p^4} \left[-24\pi - \{ (32-5p^2-6p^4) + \right. \\ \left. + \frac{3}{2} (1-p^2) \ell(1-p^2) \} F(p) + \left\{ 2(40+7p^2) - \frac{3}{2} (5+2p^2) \ell(1-p^2) \right\} E'(p) \right]$$

V. T. 426, N. 7.

$$3) \int \text{Arccos } x \cdot \ell(1-p^2 x^2) \frac{x dx}{\sqrt{1-p^2 x^2}^3} = \frac{1}{p^4} \left[-\pi + \left\{ 2 + \frac{1}{2} \ell(1-p^2) \right\} F(p) \right] \text{ V. T. 426, N. 15.}$$

$$4) \int \text{Arccos } x \cdot \ell(1-p^2 x^2) \frac{x^2 dx}{\sqrt{1-p^2 x^2}^3} = \frac{1}{p^4} \left[\left\{ (4-p^2) + \frac{1}{2} \ell(1-p^2) \right\} F(p) - \right. \\ \left. - \left\{ 4 - \frac{1}{2} \ell(1-p^2) \right\} E'(p) \right] \text{ V. T. 426, N. 14.}$$

$$5) \int \text{Arccos } x \cdot \ell(1-p^2 x^2) \frac{x^3 dx}{\sqrt{1-p^2 x^2}^3} = \frac{1}{27p^6} \left[24\pi + \{ 2(70-16p^2-3p^4) + \right. \\ \left. + \frac{3}{2} (10-p^2) \ell(1-p^2) \} F(p) - \{ 2(94+7p^2) - 3(7+p^2) \ell(1-p^2) \} E'(p) \right] \text{ V. T. 426, N. 17.}$$

$$6) \int \text{Arccos } x \cdot \ell(1-p^2 x^2) \frac{x dx}{\sqrt{1-p^2 x^2}^5} = \frac{1}{9p^4(1-p^2)} \left[-(1-p^2)\pi - 3(2-p^2)F(p) + \right. \\ \left. + \left\{ 8 + \frac{3}{2} \ell(1-p^2) \right\} E'(p) \right] \text{ V. T. 427, N. 11.}$$

$$7) \int \text{Arccos } x \cdot \ell(1-p^2 x^2) \frac{x^2 dx}{\sqrt{1-p^2 x^2}^5} = \frac{1}{9p^4(1-p^2)} \left[8(1-p^2)\pi - 3 \{ (8-7p^2) + \right. \\ \left. + \frac{3}{2} (1-p^2) \ell(1-p^2) \} F(p) + \left\{ 8 + \frac{3}{2} \ell(1-p^2) \right\} E'(p) \right] \text{ V. T. 427, N. 12.}$$

$$8) \int \text{Arccos } x \cdot \ell(1-p^2 x^2) \frac{x^3 dx}{\sqrt{1-p^2 x^2}^5} = \frac{1}{9p^6(1-p^2)} \left[8(1-p^2)\pi - 3 \{ (20-22p^2+3p^4) + \right. \\ \left. + 3(1-p^2) \ell(1-p^2) \} F(p) + \left\{ 4(11-9p^2) - \frac{3}{2} (2-3p^2) \ell(1-p^2) \right\} E'(p) \right]$$

V. T. 427, N. 13.

F. Alg. irrat. à dén. $\sqrt{1-p^2 x^2}$;

Logar. en num. $\log(1-p^2 x^2)$;

TABLE 438, suite.

Lim. 0 et 1.

Circ. Inverse $\text{Arccos } x$; $[p^2 < 1]$.

$$9) \int \text{Arccos } x \cdot \log(1-p^2 x^2) \frac{x^7 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{27 p^6 (1-p^2)} \left[- \{ (320 - 370 p^2 + 53 p^4 + 6 p^6) + \right. \\ \left. + \frac{3}{2} (28 - p^2) (1-p^2) \log(1-p^2) \} F'(p) + \{ 2 (160 - 141 p^2 - 7 p^4) - \right. \\ \left. - \frac{3}{2} (20 - 21 p^2 - 2 p^4) \log(1-p^2) \} E'(p) \right] \text{ V. T. 427, N. 14.}$$

$$10) \int \text{Arccos } x \cdot \log(1-p^2 x^2) \frac{x dx}{\sqrt{1-p^2 x^2}} = \frac{1}{225 p^2 (1-p^2)^2} \left[-9 (1-p^2)^2 \pi - \right. \\ \left. - \{ 2 (53 - 53 p^2 + 15 p^4) + \frac{15}{2} (1-p^2) \log(1-p^2) \} F'(p) + \right. \\ \left. + (2 - p^2) \{ 62 + 15 \log(1-p^2) \} E'(p) \right] \text{ V. T. 429, N. 1.}$$

$$11) \int \text{Arccos } x \cdot \log(1-p^2 x^2) \frac{x^3 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{225 p^4 (1-p^2)^2} \left[16 (1-p^2)^2 \pi + \right. \\ \left. + \{ (44 - 119 p^2 + 45 p^4) - \frac{15}{2} (1-p^2) \log(1-p^2) \} F'(p) - \{ 2 (38 - 69 p^2) + \right. \\ \left. + \frac{15}{2} (1 - 3 p^2) \log(1-p^2) \} E'(p) \right] \text{ V. T. 429, N. 2.}$$

$$12) \int \text{Arccos } x \cdot \log(1-p^2 x^2) \frac{x^5 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{225 p^6 (1-p^2)^2} \left[-184 (1-p^2)^2 \pi + \right. \\ \left. + \{ 2 (322 - 622 p^2 + 285 p^4) + \frac{15}{2} (14 - 15 p^2) (1-p^2) \log(1-p^2) \} F'(p) - \right. \\ \left. - \{ 2 (138 - 169 p^2) + 15 (3 - 4 p^2) \log(1-p^2) \} E'(p) \right] \text{ V. T. 429, N. 3.}$$

$$13) \int \text{Arccos } x \cdot \log(1-p^2 x^2) \frac{x^7 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{225 p^8 (1-p^2)^2} \left[16 (1-p^2)^2 \pi + \right. \\ \left. + \{ (2144 - 4394 p^2 + 2445 p^4 - 225 p^6) + \frac{15}{2} (44 - 45 p^2) (1-p^2) \log(1-p^2) \} F'(p) + \right. \\ \left. + \{ -2 (688 - 1169 p^2 + 450 p^4) + \frac{15}{2} (4 - 17 p^2 + 15 p^4) \log(1-p^2) \} E'(p) \right]$$

F. Alg. irrat. à dén. $\sqrt{1-p^2 x^2}$;

Logar. en num. $\ell(1-p^2 x^2)$; TABLE 438, suite.

Lim. 0 et 1.

Circ. Inverse $\text{Arccos } x$; $[p^2 < 1]$.

$$14) \int \text{Arccos } x . \ell(1-p^2 x^2) \frac{x^9 dx}{\sqrt{1-p^2 x^2}} = \frac{1}{675 p^{10} (1-p^2)^2} \left[16 (1-p^2)^2 \pi + \right. \\ \left. + \{2(7216 - 15216 p^2 + 8955 p^4 - 925 p^6 - 75 p^8) + \frac{15}{2} (272 - 280 p^2 + 5 p^4) \right. \\ \left. (1-p^2) \ell(1-p^2)\} F'(p) + \{-2(6064 - 11032 p^2 + 4700 p^4 + 175 p^6) + \right. \\ \left. + 15(56 - 128 p^2 + 70 p^4 + 5 p^6) \ell(1-p^2)\} E'(p) \right] \text{ V. T. 429, N. 5.}$$

F. Alg. irrat. à dén. $\sqrt{1-p^2 + p^2 x^2}$;

Logar. en num. $\ell(1-p^2 + p^2 x^2)$; TABLE 439.

Lim. 0 et 1.

Circ. Inverse $\text{Arccos } x$; $[p^2 < 1]$.

$$1) \int \text{Arccos } x . \ell(1-p^2 + p^2 x^2) \frac{x dx}{\sqrt{1-p^2 + p^2 x^2}} = \frac{1}{p^2} \left[\left\{1 - \frac{1}{2} \ell(1-p^2)\right\} \pi \sqrt{1-p^2} + \right. \\ \left. + (2-p^2) F'(p) - \left\{4 - \frac{1}{2} \ell(1-p^2)\right\} E'(p) \right] \text{ V. T. 426, N. 3.}$$

$$2) \int \text{Arccos } x . \ell(1-p^2 + p^2 x^2) \frac{x^3 dx}{\sqrt{1-p^2 + p^2 x^2}} = \frac{1}{27 p^4} \left[-3 \left\{8 - \frac{3}{2} (1-p^2)\right\} \pi \sqrt{1-p^2} - \right. \\ \left. - \{(32 - 59 p^2 + 21 p^4) + \frac{3}{2} (1-p^2) \ell(1-p^2)\} F'(p) + \{2(40 - 47 p^2) - \right. \\ \left. - \frac{3}{2} (5 - 7 p^2) \ell(1-p^2)\} E'(p) \right] \text{ V. T. 426, N. 1.}$$

$$3) \int \text{Arccos } x . \ell(1-p^2 + p^2 x^2) \frac{x dx}{\sqrt{1-p^2 + p^2 x^2}} = \frac{1}{p^2} \left[\left\{1 + \frac{1}{2} \ell(1-p^2)\right\} \frac{\pi}{\sqrt{1-p^2}} - \right. \\ \left. - \left\{2 + \frac{1}{2} \ell(1-p^2)\right\} F'(p) \right] \text{ V. T. 426, N. 9.}$$

$$4) \int \text{Arccos } x . \ell(1-p^2 + p^2 x^2) \frac{x^3 dx}{\sqrt{1-p^2 + p^2 x^2}} = \frac{1}{p^4} \left[\ell(1-p^2) . \pi \sqrt{1-p^2} + \right. \\ \left. + \{(4 - 3 p^2) + \frac{1}{2} (1-p^2) \ell(1-p^2)\} F'(p) - \left\{4 - \frac{1}{2} \ell(1-p^2)\right\} E'(p) \right]$$

V. T. 426, N. 10.

F. Alg. irrat. à dén. $\sqrt{1-p^2+p^2x^2}$;

Logar. en num. $\log(1-p^2+p^2x^2)$; TABLE 439, suite.

Lim. 0 et 1.

Circ. Inverse $\arccos x$; [$p^2 < 1$].

$$5) \int \arccos x \cdot \log(1-p^2+p^2x^2) \frac{x^5 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{27p^6} \left[-12 \{2-3\log(1-p^2)\} \pi \sqrt{1-p^2} - \right. \\ \left. - \{2(70-124p^2+51p^4) + \frac{3}{2}(10-9p^2)(1-p^2)\log(1-p^2)\} F'(p) + 2 \{(94-101p^2) - \right. \\ \left. - 3(7-8p^2)\log(1-p^2)\} E'(p) \right] \text{ V. T. 426, N. 11.}$$

$$6) \int \arccos x \cdot \log(1-p^2+p^2x^2) \frac{x dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{9p^2(1-p^2)} \left[\left\{1 + \frac{3}{2}\log(1-p^2)\right\} \frac{\pi}{\sqrt{1-p^2}} + \right. \\ \left. + 3(2-p^2)F'(p) - \left\{8 + \frac{3}{2}\log(1-p^2)\right\} E'(p) \right] \text{ V. T. 427, N. 1.}$$

$$7) \int \arccos x \cdot \log(1-p^2+p^2x^2) \frac{x^3 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{9p^4} \left[\{8 + 3\log(1-p^2)\} \frac{\pi}{\sqrt{1-p^2}} - \right. \\ \left. - 3 \left\{(8-p^2) + \frac{3}{2}\log(1-p^2)\right\} F'(p) + \left\{8 + \frac{3}{2}\log(1-p^2)\right\} E'(p) \right] \text{ V. T. 427, N. 2.}$$

$$8) \int \arccos x \cdot \log(1-p^2+p^2x^2) \frac{x^5 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{9p^6} \left[-4 \{2 + 3\log(1-p^2)\} \pi \sqrt{1-p^2} + \right. \\ \left. + 3 \{20-18p^2+p^4\} + 3(1-p^2)\log(1-p^2)\} F'(p) - \{4(11-2p^2) - \right. \\ \left. - \frac{3}{2}(2+p^2)\log(1-p^2)\} E'(p) \right] \text{ V. T. 427, N. 3.}$$

$$9) \int \arccos x \cdot \log(1-p^2+p^2x^2) \frac{x^7 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{27p^8} \left[72\log(1-p^2) \cdot \pi \sqrt{1-p^2} - \right. \\ \left. - \{(320-590p^2+273p^4-9p^6) + \frac{3}{2}(28-27p^2)(1-p^2)\log(1-p^2)\} F'(p) + \right. \\ \left. + \{2(160-179p^2+12p^4) - \frac{3}{2}(20-19p^2-3p^4)\log(1-p^2)\} E'(p) \right] \text{ V. T. 427, N. 4.}$$

$$10) \int \arccos x \cdot \log(1-p^2+p^2x^2) \frac{x dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{225p^2(1-p^2)^2} \left[\left\{1 + \frac{5}{2}\log(1-p^2)\right\} \right. \\ \left. \frac{9\pi}{\sqrt{1-p^2}} + \left\{2(53-53p^2+15p^4) + \frac{15}{2}(1-p^2)\log(1-p^2)\right\} F'(p) - (2-p^2) \right. \\ \left. \{62+15\log(1-p^2)\} E'(p) \right] \text{ V. T. 428, N. 1.}$$

F. Alg. irrat. à dén. $\sqrt{1-p^2+p^2x^2}$;

Logar. en num. $\mathcal{L}(1-p^2+p^2x^2)$; TABLE 439, suite.

Lim. 0 et 1.

Circ. Inverse $\text{Arccos } x$; $[p^2 < 1]$.

$$11) \int \text{Arccos } x \cdot \mathcal{L}(1-p^2+p^2x^2) \frac{x^2 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{225p^4(1-p^2)} \left[\{16+15\mathcal{L}(1-p^2)\} \right. \\ \left. - \frac{\pi}{\sqrt{1-p^2}} + \left\{ (44+31p^2-30p^4) - \frac{15}{2}(1-p^2)\mathcal{L}(1-p^2) \right\} F'(p) - \left\{ 2(38+31p^2) + \right. \right. \\ \left. \left. + \frac{15}{2}(1+2p^2)\mathcal{L}(1-p^2) \right\} E'(p) \right] \text{ V. T. 428, N. 2.}$$

$$12) \int \text{Arccos } x \cdot \mathcal{L}(1-p^2+p^2x^2) \frac{x^4 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{225p^6} \left[4\{46+15\mathcal{L}(1-p^2)\} \frac{\pi}{\sqrt{1-p^2}} - \right. \\ \left. - \left\{ 2(322-22p^2-15p^4) + \frac{15}{2}(14+p^2)\mathcal{L}(1-p^2) \right\} F'(p) + \left\{ 2(138+31p^2) + \right. \right. \\ \left. \left. + 15(3+p^2)\mathcal{L}(1-p^2) \right\} E'(p) \right] \text{ V. T. 428, N. 3.}$$

$$13) \int \text{Arccos } x \cdot \mathcal{L}(1-p^2+p^2x^2) \frac{x^6 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{225p^8} \left[-24\{16+15\mathcal{L}(1-p^2)\} \pi \sqrt{1-p^2} + \right. \\ \left. + \left\{ (2144-2038p^2+89p^4+30p^6) + \frac{15}{2}(44+p^2)(1-p^2)\mathcal{L}(1-p^2) \right\} F'(p) + \right. \\ \left. + \left\{ -2(688-207p^2+31p^4) + \frac{15}{2}(4+9p^2+2p^4)\mathcal{L}(1-p^2) \right\} E'(p) \right] \\ \text{V. T. 428, N. 4.}$$

$$14) \int \text{Arccos } x \cdot \mathcal{L}(1-p^2+p^2x^2) \frac{x^8 dx}{\sqrt{1-p^2+p^2x^2}} = \frac{1}{675p^{10}} \left[576\{2+5\mathcal{L}(1-p^2)\} \pi \sqrt{1-p^2} - \right. \\ \left. - \left\{ 2(7216-13648p^2+6603p^4-201p^6-45p^8) + \frac{15}{2}(272-264p^2-3p^4) \right. \right. \\ \left. \left. (1-p^2)\mathcal{L}(1-p^2) \right\} F'(p) + \left\{ 2(6064-7160p^2+828p^4-93p^6) + \right. \right. \\ \left. \left. + 30(56-18p^2-18p^4-3p^6)\mathcal{L}(1-p^2) \right\} E'(p) \right] \text{ V. T. 428, N. 5.}$$

F. Alg. irrat. d'autre forme;

Logarithme en num.;

TABLE 440.

Lim. 0 et 1.

Circulaire Inverse; $[p^2 < 1]$.

$$1) \int \text{Arcsin } x \cdot \mathcal{L}(1-p^2x^2) \cdot x dx \sqrt{1-p^2x^2} = \frac{1}{27p^2} \left[3\pi \left\{ 1 - \frac{3}{2}\mathcal{L}(1-p^2) \right\} \sqrt{1-p^2} + \right. \\ \left. + \left\{ 2(11-11p^2+3p^4) - \frac{3}{2}(1-p^2)\mathcal{L}(1-p^2) \right\} F'(p) - (2-p^2) \left\{ 14-3\mathcal{L}(1-p^2) \right\} E'(p) \right] \\ \text{V. T. 426, N. 1.}$$

F. Alg. irrat. d'autre forme;

Logarithme en num.;

TABLE 440, suite.

Lim. 0 et 1.

Circulaire Inverse; [$p^2 < 1$].

$$2) \int \operatorname{Arcsin} x \cdot l(1-p^2+p^2x^2) \cdot x dx \sqrt{1-p^2+p^2x^2} = \frac{1}{27p^2} \left[-3\pi - \left\{ 2(11-11p^2+3p^4) - \frac{3}{2}(1-p^2)l(1-p^2) \right\} F'(p) + (2-p^2) \{ 14-3l(1-p^2) \} E'(p) \right] \text{ V. T. 426, N. 2.}$$

$$3) \int \operatorname{Arcsin} x \cdot lx \frac{xdx}{\sqrt{1-x^2}} = \frac{1}{8}\pi^2 - 2 \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ V. T. 243, N. 10 et T. 108, N. 11.}$$

$$4) \int (\operatorname{Arcsin} x)^{q-1} \cdot lx \frac{dx}{\sqrt{1-x^2}} = -\frac{1}{q} \left(\frac{\pi}{2} \right)^q \left\{ 1 - \sum_1^{\infty} \frac{2}{q+2m} \sum_1^{\infty} \frac{1}{(2n)^{2m}} \right\} \text{ V. T. 230, N. 2.}$$

$$5) \int \operatorname{Arccos} x \cdot l(1-p^2x^2) \cdot x dx \sqrt{1-p^2x^2} = \frac{1}{27p^2} \left[-3\pi - \left\{ 2(11-11p^2+3p^4) - \frac{3}{2}(1-p^2)l(1-p^2) \right\} F'(p) + (2-p^2) \{ 14-3l(1-p^2) \} E'(p) \right] \text{ V. T. 426, N. 2.}$$

$$6) \int \operatorname{Arccos} x \cdot l(1-p^2+p^2x^2) \cdot x dx \sqrt{1-p^2+p^2x^2} = \frac{1}{27p^2} \left[3\pi \left\{ 1 - \frac{3}{2}l(1-p^2) \right\} \sqrt{1-p^2} + \left\{ 2(11-11p^2+3p^4) - \frac{3}{2}(1-p^2)l(1-p^2) \right\} F'(p) - (2-p^2) \{ 14-3l(1-p^2) \} E'(p) \right] \text{ V. T. 426, N. 1.}$$

$$7) \int (\operatorname{Arccos} x)^{q-1} l(1+x) \frac{dx}{\sqrt{1-x^2}} = \frac{1}{q} \left(\frac{\pi}{2} \right)^q \sum_1^{\infty} \frac{2^{2m}-1}{4^{m-1}} \frac{1}{q+2m} \sum_1^{\infty} \frac{1}{(2n)^{2m}} \text{ V. T. 233, N. 1.}$$

$$8) \int (\operatorname{Arccos} x)^{q-1} l(1-x) \frac{dx}{\sqrt{1-x^2}} = \frac{1}{q} \left(\frac{\pi}{2} \right)^q \left\{ -2 + \sum_1^{\infty} \frac{1}{4^{m-1}} \frac{1}{q+2m} \sum_1^{\infty} \frac{1}{(2n)^{2m}} \right\} \text{ V. T. 233, N. 2.}$$

$$9) \int (\operatorname{Arccos} x)^{q-1} \cdot l(1-x^2) \frac{dx}{\sqrt{1-x^2}} = \frac{2}{q} \left(\frac{\pi}{2} \right)^q \left\{ -1 + \sum_1^{\infty} \frac{2}{q+2m} \sum_1^{\infty} \frac{1}{(2n)^{2m}} \right\} \text{ V. T. 233, N. 5.}$$

F. Algébrique;

Logar. en dénom.;

TABLE 441.

Lim. 0 et 1.

Circul. Inverse.

$$1) \int \operatorname{Arctg} x \frac{lx}{\{\pi^2+(lx)^2\}^2} \frac{dx}{x} = \frac{3-\pi}{8\pi} \text{ V. T. 129, N. 6.}$$

$$2) \int \operatorname{Arctg} x \frac{lx}{\{\pi^2+(lx)^2\}^2} \frac{dx}{x} = \frac{l2-1}{32\pi} \text{ V. T. 129, N. 7.}$$

$$3) \int \operatorname{Arctg} x \frac{lx}{\{q^2+(lx)^2\}^2} \frac{dx}{x} = \frac{1}{8q} \left\{ -\frac{\pi}{q} + Z' \left(\frac{2q+3\pi}{4\pi} \right) - Z' \left(\frac{2q+\pi}{4\pi} \right) \right\} \text{ V. T. 129, N. 9.}$$

F. Algébrique;

Logar. en dénom.;

TABLE 441, suite.

Lim. 0 et 1.

Circul. Inverse.

$$4) \int \operatorname{Arccot} x \frac{l x}{\{\pi^2 + (l x)^2\}^2} \frac{d x}{x} = \frac{\pi - 5}{8 \pi} \text{ V. T. 129, N. 6.}$$

$$5) \int \operatorname{Arccot} x \frac{l x}{\{\pi^2 + (l x)^2\}^2} \frac{d x}{x} = -\frac{l 2 + 1}{32 \pi} \text{ V. T. 129, N. 7.}$$

$$6) \int \operatorname{Arccot} x \frac{l x}{\{q^2 + (l x)^2\}^2} \frac{d x}{x} = \frac{1}{8 q} \left\{ -\frac{\pi}{q} + Z' \left(\frac{2 q + \pi}{4 \pi} \right) - Z' \left(\frac{2 q + 3 \pi}{4 \pi} \right) \right\} \text{ V. T. 129, N. 9.}$$

$$7) \int \frac{\operatorname{Arccos} x}{(\operatorname{Arccos} x)^2 + (l x)^2} \frac{d x}{x} = \frac{\pi}{2 l 2} \text{ V. T. 431, N. 1.}$$

$$8) \int \frac{\operatorname{Arccos} x}{(\operatorname{Arccos} x)^2 + (l x)^2} \frac{x d x}{1 - x^2} = \infty \text{ V. T. 431, N. 8.}$$

$$9) \int \frac{l x}{(\operatorname{Arccos} x)^2 + (l x)^2} \frac{1}{(1-p)^2 - 4 p x^2} \frac{d x}{\sqrt{1-x^2}} = \frac{1}{2} \frac{\pi}{p^2 - 1} \left\{ \frac{1}{l 2 - l(1+p)} - \frac{1+p}{1-p} \right\} [p^2 \leq 1], =$$

$$= \frac{1}{2} \frac{\pi}{p^2 - 1} \left\{ \frac{p+1}{p-1} - \frac{1}{l(2p) - l(1+p)} \right\} [p^2 > 1] \text{ V. T. 431, N. 10.}$$

$$10) \int \frac{\operatorname{Arccos} x}{(\operatorname{Arccos} x)^2 + (l x)^2} \frac{x}{(1-p)^2 - 4 p x^2} d x = \frac{\pi}{8 p} \left\{ \frac{1}{l 2 - l(1+p)} - \frac{1}{l 2} \right\} [p^2 \leq 1], =$$

$$= \frac{\pi}{2 p} \left\{ \frac{1}{l 2} - \frac{1}{l(1+p) - l(2p)} \right\} [p^2 > 1] \text{ V. T. 431, N. 11.}$$

$$11) \int \frac{l x}{(\operatorname{Arccos} x)^2 + (l x)^2} \frac{d x}{\sqrt{1-x^2}} = \frac{\pi}{2} \left(1 - \frac{1}{l 2} \right) \text{ V. T. 431, N. 2.}$$

$$12) \int \frac{l x}{(\operatorname{Arccos} x)^2 + (l x)^2} \frac{d x}{\sqrt{1-x^2}} = \frac{1}{2} \pi \text{ V. T. 431, N. 7.}$$

$$13) \int \frac{l x}{(\operatorname{Arccos} x)^2 + (l x)^2} \frac{d x}{x \sqrt{1-x^2}} = \infty \text{ V. T. 431, N. 6.}$$

F. Algébrique;

Logarithme;

TABLE 442

Lim. 0 et ∞ .

Circulaire Inverse.

$$1) \int \operatorname{Arctg} x \cdot (l x)^{2 \alpha - 1} \frac{d x}{x} = \infty \text{ V. T. 135, N. 3.}$$

$$2) \int \operatorname{Arctg} p x \cdot l x \frac{x d x}{(q^2 + x^2)^2} = \frac{1}{2 q^3} l(1+p q) + \frac{p \pi}{2 q(1+p q)} \left\{ l p + \frac{1}{1-p q} l(p q) \right\}$$

V. T. 135, N. 5 et T. 250, N. 3.

$$3) \int \operatorname{Arctg} \frac{x}{p} \cdot l x \frac{x dx}{(q^2 - x^2)^2} = \frac{\pi}{8} \left\{ \frac{\pi}{p} - \frac{1}{q^2} l \frac{p^2 + q^2}{p^2} \right\} \text{ V. T. 135, N. 5, 6 et T. 250, N. 6.}$$

$$4) \int l x \cdot \left\{ \frac{1}{x^2} \operatorname{Arctg} \frac{x}{q} \cdot \operatorname{Arctg} \frac{x}{p} - \frac{q}{x(q^2 + x^2)} \operatorname{Arctg} \frac{x}{p} - \frac{p}{x(p^2 + x^2)} \operatorname{Arctg} \frac{x}{q} \right\} dx = \\ = \frac{\pi}{2} \left\{ \frac{1}{q} l \frac{p+q}{p} + \frac{1}{p} l \frac{p+q}{q} \right\} \text{ V. T. 247, N. 8.}$$

$$5) \int \operatorname{Arctg} \left(\frac{px}{\sqrt{1+x^2}} \right) \cdot l x \frac{x dx}{\sqrt{1+x^2}} = \frac{\pi}{2} l \left\{ p + \sqrt{1+p^2} \right\} - \frac{\pi}{4p\sqrt{1+p^2}} l(1+p^2) [p \geq 1] \\ \text{ V. T. 135, N. 5 et T. 252, N. 16.}$$

$$6) \int \{ \operatorname{Arctg} (l[p x]) - \operatorname{Arctg} (l[q x]) \} \frac{dx}{x} = \pi l \frac{p}{q} \text{ (VIII, 435).}$$

$$7) \int \{ \operatorname{Arctg} ((r + s l[p x])) - \operatorname{Arctg} ((r + s l[q x])) \} \frac{dx}{x} = \pi l \frac{p}{q} \text{ (VIII, 435).}$$

$$8) \int \operatorname{Arctg} x \cdot l(1+x^2) \frac{dx}{x^3} = \frac{1}{3} \pi^2 \text{ (IV, 549).}$$

$$9) \int \operatorname{Arctg} \frac{x}{q} \cdot l(p^2 + x^2) \frac{x dx}{(p^2 + x^2)^2} = \frac{\pi}{2p(p^2 - q^2)} \left\{ \frac{1}{2} (p-q) + p l(p+q) - q l(2p) \right\} \\ \text{ V. T. 136, N. 13 et T. 249, N. 3.}$$

$$10) \int \operatorname{Arctg} \frac{x}{q} \cdot l(p^2 + x^2) \frac{x dx}{(p^2 - x^2)^2} = \frac{\pi}{8p^2(p^2 + q^2)} \left\{ 2(q^2 - p^2) l(p+q) - \right. \\ \left. - (p^2 + q^2) l(p^2 + q^2) - 4pq \operatorname{Arctg} \frac{p}{q} \right\} \text{ V. T. 136, N. 13, 15 et T. 248, N. 5.}$$

$$11) \int \operatorname{Arctg} \frac{x}{q} \cdot l(p^2 - x^2) \frac{dx}{(p^2 + x^2)^2} = \frac{\pi}{4p^2(p^2 - q^2)} \{ (p^2 + q^2) l(p^2 + q^2) + \\ + (p^2 - q^2) l(p+q) - 2pq l(2p^2) \} \text{ V. T. 136, N. 16 et T. 248, N. 5.}$$

$$12) \int \operatorname{Arctg} \frac{x}{q} \cdot l(p^2 - x^2) \frac{dx}{(p^2 + x^2)^2} = \frac{\pi}{4p^2(p^2 - q^2)} \left\{ \frac{1}{2} p(p-q) + (p^2 + q^2) l(p^2 + q^2) + \right. \\ \left. + (2p^2 - q^2) l(p+q) - pq l(8p^2) \right\} \text{ V. T. 442, N. 9, 11.}$$

$$13) \int \operatorname{Arccot} x \cdot l(1+x^2) \frac{dx}{x} = \frac{1}{6} \pi^2 \text{ (IV, 550).}$$

$$14) \int \operatorname{Arccot} \frac{x}{q} \cdot l(p^2 + x^2) \frac{x dx}{(p^2 + x^2)^2} = \frac{\pi}{2p^2(p^2 - q^2)} \left\{ \frac{1}{2} q(p-q) + pq l 2 + \right. \\ \left. + (p^2 + pq - q^2) l p - p^2 l(p+q) \right\} \text{ V. T. 136, N. 13 et T. 249, N. 10.}$$

$$15) \int \operatorname{Arctg} x \cdot l \left(\frac{1+x}{\sqrt{x}} \right) \cdot \frac{dx}{1+x^2} = \frac{1}{16} \pi^2 l 2 + \frac{\pi}{4} \sum_0^{\infty} \frac{(-1)^n}{(2n+1)^2} \text{ (VIII, 421).}$$

$$1) \int_1^{\infty} \operatorname{Arctg} x \cdot l x \frac{dx}{x^2} = \frac{\pi}{4} + \frac{1}{2} l 2 + \frac{1}{48} \pi^2 \text{ V. T. 339, N. 4.}$$

$$2) \int_1^{\infty} \operatorname{Arccot} x \cdot l x \frac{dx}{x^2} = \frac{\pi}{4} - \frac{1}{2} l 2 - \frac{1}{48} \pi^2 \text{ V. T. 339, N. 3.}$$

$$3) \int_1^{\infty} \operatorname{Arccot} x \cdot (l x)^2 \cdot (3 - l x) \frac{dx}{x^3} = \frac{7}{1920} \pi^2 \text{ V. T. 109, N. 9.}$$

$$4) \int_1^{\infty} \operatorname{Arccot} x \cdot (l x)^4 \cdot (5 - l x) \frac{dx}{x^5} = \frac{31}{16128} \pi^4 \text{ V. T. 109, N. 20.}$$

$$5) \int_1^{\infty} \operatorname{Arccot} x \cdot (l x)^{a-1} \cdot (a - l x) \frac{dx}{x} = \frac{1^{a/1}}{2^{a+1}} \sum_0^{\infty} \frac{(-1)^n}{(n+1)^{a+1}} \text{ V. T. 110, N. 3.}$$

$$6) \int_0^{1/\sqrt{2}} (\operatorname{Arcsin} x)^{p-1} \cdot l x \frac{dx}{\sqrt{1-x^2}} = \frac{1}{2^p} \left(\frac{\pi}{4}\right)^p \left\{ -l 2 - 2 + \sum_1^{\infty} \frac{4}{p+2m} \sum_1^{\infty} \frac{1}{(4n)^{2m}} \right\} \\ \text{V. T. 254, N. 12.}$$

$$7) \int_{1/\sqrt{2}}^1 (\operatorname{Arccos} x)^{p-1} \cdot l(1-x^2) \frac{dx}{\sqrt{1-x^2}} = \frac{1}{p} \left(\frac{\pi}{4}\right)^p \left\{ l 2 - 2 + \sum_1^{\infty} \frac{4}{p+2m} \sum_1^{\infty} \frac{1}{(4n)^{2m}} \right\} \\ \text{V. T. 254, N. 14.}$$

$$1) \int_0^1 li(x) \cdot \left(l \frac{1}{x}\right)^{p-1} \frac{dx}{x} = -\frac{1}{p} \Gamma(p) [0 \leq p \leq 1] \text{ (VIII, 542).}$$

$$2) \int_0^1 li(x) \cdot \left(l \frac{1}{x}\right)^{p-1} \frac{dx}{x^2} = -\pi \operatorname{Cosec} p \pi \cdot \Gamma(p) [0 \leq p \leq 1] \text{ V. T. 400, N. 2.}$$

$$3) \int_0^1 li(x) \frac{x^{p-1}}{\sqrt{l \frac{1}{x}}} dx = -2 \sqrt{\frac{\pi}{p}} \cdot l \{ \sqrt{p} + \sqrt{1+p} \} [p > 0] \text{ V. T. 283, N. 5.}$$

$$4) \int_0^1 li(x) \frac{dx}{x^{p+1} \sqrt{l \frac{1}{x}}} = -2 \sqrt{\frac{\pi}{p}} \cdot \operatorname{Arcsin}(\sqrt{p}) [p < 1] \text{ V. T. 283, N. 6.}$$

$$5) \int_0^1 li(x) \cdot (l x)^{p-1} \frac{dx}{x^2} = -\pi \operatorname{Cot} p \pi \cdot \Gamma(p) \text{ V. T. 400, N. 1.}$$

$$1) \int \operatorname{Arctg} \frac{x}{q} \cdot \cos px \frac{dx}{x} = -\frac{\pi}{2} \operatorname{Li}(e^{-pq}) \quad (\text{VIII, 358}).$$

$$2) \int \operatorname{Arctg} \left\{ \frac{q \mp \frac{1}{q}}{1 \pm x^2} x \right\} \cdot \cos x \frac{dx}{x} = \frac{\pi}{2} \left\{ \pm \operatorname{Li}(e^{-q}) + \operatorname{Li}(e^{-\frac{1}{q}}) \right\} \quad (\text{VIII, 358}).$$

$$3) \int \operatorname{Arctg} \left(\frac{2p \sin x}{1-p^2} \right) \frac{dx}{x} = \frac{\pi}{2} l \frac{1+p}{1-p} [p^2 < 1]$$

$$4) \int \operatorname{Arctg} \left(\frac{p \sin x}{1+p \cos x} \right) \frac{dx}{x} = \frac{1}{2} \pi l (1+p) [p^2 < 1] \text{ Sur 3) et 4) voyez Bronwin, Mathem. I. 197.}$$

$$5) \int \operatorname{Arctg} \left(\frac{2p \cos^2 x}{1-p^2 \cos^2 x} \right) \frac{\sin x}{q^2 \sin^2 x + r^2 \cos^2 x} \frac{dx}{x} = \frac{1}{r^2} \operatorname{Arctg} \left(\frac{pq}{q+r} \right) \quad (\text{VIII, 414}).$$

$$6) \int \operatorname{Arctg} \left(\frac{2p \cos^2 x}{1-p^2 \cos^2 x} \right) \frac{\operatorname{Tg} x}{q^2 \sin^2 x + r^2 \cos^2 x} \frac{dx}{x} = \frac{1}{r^2} \operatorname{Arctg} \left(\frac{pq}{q+r} \right) \quad (\text{VIII, 414}).$$

$$7) \int \operatorname{Arctg} \left(\frac{2p \cos^2 2x}{1-p^2 \cos^2 2x} \right) \frac{\operatorname{Tg} x}{q^2 \sin^2 2x + r^2 \cos^2 2x} \frac{dx}{x} = \frac{1}{r^2} \operatorname{Arctg} \left(\frac{pq}{q+r} \right) \quad (\text{VIII, 415}).$$

$$8) \int \operatorname{Arctg} \left(\frac{2p \sin^2 x}{1-p^2 \sin^2 x} \right) \frac{\sin x}{q^2 \sin^2 x + r^2 \cos^2 x} \frac{dx}{x} = \frac{1}{q^2} \operatorname{Arctg} \left(\frac{pr}{q+r} \right) \quad (\text{VIII, 415}).$$

$$9) \int \operatorname{Arctg} \left(\frac{2p \sin^2 x}{1-p^2 \sin^2 x} \right) \frac{\operatorname{Tg} x}{q^2 \sin^2 x + r^2 \cos^2 x} \frac{dx}{x} = \frac{1}{q^2} \operatorname{Arctg} \left(\frac{pr}{q+r} \right) \quad (\text{VIII, 415}).$$

$$10) \int \operatorname{Arctg} \left(\frac{2p \sin^2 2x}{1-p^2 \sin^2 2x} \right) \frac{\operatorname{Tg} x}{q^2 \sin^2 2x + r^2 \cos^2 2x} \frac{dx}{x} = \frac{1}{q^2} \operatorname{Arctg} \left(\frac{pr}{q+r} \right) \quad (\text{VIII, 415}).$$

$$1) \int \operatorname{Arctg}(rx) \cdot \sin px \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} e^{-pq} \left\{ \frac{1}{2} l \left(\frac{1+qr}{1-qr} \right)^2 + \operatorname{Ei} \left(pq - \frac{p}{r} \right) \right\} - \frac{\pi}{4q} e^{pq} \operatorname{Ei} \left(-pq - \frac{p}{r} \right) \quad (\text{VIII, 453}).$$

$$2) \int \operatorname{Arctg} \left(\frac{x}{q} \right) \cdot \sin px \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} e^{-pq} \{ A + l(2pq) \} - \frac{\pi}{4q} e^{pq} \operatorname{Ei}(-2pq) \quad (\text{VIII, 454}).$$

$$3) \int \operatorname{Arctg}(rx) \cdot \cos px \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} e^{-pq} \left\{ \frac{1}{2} l \left(\frac{1-qr}{1+qr} \right)^2 - \operatorname{Ei} \left(pq - \frac{p}{r} \right) \right\} - \frac{\pi}{4} e^{pq} \operatorname{Ei} \left(-pq - \frac{p}{r} \right) \quad (\text{VIII, 454}).$$

$$4) \int \operatorname{Arctg} \left(\frac{x}{q} \right) \cdot \cos px \frac{x dx}{q^2 + x^2} = -\frac{\pi}{4} e^{-pq} \{A + l(2pq)\} - \frac{\pi}{4} e^{pq} \operatorname{Ei}(-2pq) \text{ (VIII, 454).}$$

$$5) \int \operatorname{Arctg}(\operatorname{Tg} x) \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} l \frac{e^{2q} + 1}{e^{2q}} \text{ (IV, 555).}$$

$$6) \int \operatorname{Arctg}(\operatorname{Cot} x) \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} l \frac{e^{2q}}{e^{2q} - 1} \text{ (IV, 555).}$$

$$7) \int \operatorname{Arctg} \left(\frac{2p \cos x}{1 - p^2} \right) \frac{dx}{q^2 + x^2} = \frac{\pi}{q} \operatorname{Arctg}(pe^{-q}) \text{ Bronwin, Mathem. 1. 197.}$$

$$8) \int \operatorname{Arctg} \left(\frac{r \sin sx}{1 + r \cos sx} \right) \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} l(1 + re^{-q}) \text{ (VIII, 499).}$$

$$9) \int \operatorname{Arctg} \left(\frac{r \sin sx}{1 + r \cos sx} \right) \cdot \sin px \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} (e^{pq} - e^{-pq}) l(1 + re^{-q}) - \\ - \frac{\pi}{4q} e^{pq} \sum_1^d \frac{(-r)^n}{n} e^{-nq} + \frac{\pi}{4q} e^{-pq} \sum_0^d \frac{(-r)^n}{n} e^{nq} \text{ (VIII, 499).}$$

$$10) \int \operatorname{Arctg} \left(\frac{r \sin sx}{1 + r \cos sx} \right) \cdot \cos px \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} (e^{pq} + e^{-pq}) l(1 + re^{-q}) - \frac{\pi}{4} e^{pq} \sum_1^d \frac{(-r)^n}{n} e^{-nq} - \\ - \frac{\pi}{4} e^{-pq} \sum_1^d \frac{(-r)^n}{n} e^{nq} \left[\frac{p}{s} \text{ fraction.} \right], = \frac{\pi}{4} (e^{pq} + e^{-pq}) l(1 + re^{-q}) - \frac{\pi}{4} e^{pq} \sum_1^{d-1} \frac{(-r)^n}{n} e^{-nq} - \\ - \frac{\pi}{4} e^{-pq} \sum_1^d \frac{(-r)^n}{n} e^{nq} \left[\frac{p}{s} \text{ entier} \right] \left[\text{où } d = \mathcal{L} \frac{p}{s} \right] \text{ (VIII, 499).}$$

$$11) \int \operatorname{Arctg} \left(\frac{r \sin sx}{1 + r \cos sx} \right) \cdot \sin^{2a} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} (e^q - e^{-q})^{2a} l(1 + re^{-q}) [s > 2a], = \\ = \frac{(-1)^a \pi}{2^{2a+1}} \{ (e^q - e^{-q})^{2a} l(1 + re^{-q}) - r \} [s = 2a] \text{ (V, 112).}$$

$$12) \int \operatorname{Arctg} \left(\frac{r \sin sx}{1 + r \cos sx} \right) \cdot \sin px \cdot \sin^{2a+1} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1}} (e^q - e^{-q})^{2a+1} \\ (e^{pq} - e^{-pq}) l(1 + re^{-q}) [p < s - 2a - 1], = \frac{(-1)^{a-1} \pi}{2^{2a+1}} \{ (e^q - e^{-q})^{2a+1} \\ (e^{pq} - e^{-pq}) l(1 + re^{-q}) - r \} [p = s - 2a - 1] \text{ (V, 115).}$$

$$13) \int \operatorname{Arctg} \left(\frac{r \sin sx}{1 + r \cos sx} \right) \cdot \sin px \cdot \cos^a x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{a+1} q} (e^q + e^{-q})^a (e^{pq} - e^{-pq}) l(1 + re^{-q}) \\ [p \leq s - a] \text{ (V, 113).}$$

$$14) \int \operatorname{Arctg} \left(\frac{r \sin s x}{1 + r \cos s x} \right) \cdot \cos p x \cdot \sin^{2a} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} (e^q - e^{-q})^{2a} (e^{pq} + e^{-pq}) \ell(1 + r e^{-q'})$$

$$[p < s - 2a], = \frac{(-1)^a \pi}{2^{2a+1}} \{ (e^q - e^{-q})^{2a} (e^{pq} + e^{-pq}) \ell(1 + r e^{-q'}) - r \} [p = s - 2a]$$

(V, 113)

$$15) \int \operatorname{Arctg} \left(\frac{r^2 \sin a x}{1 - r^2 \cos a x} \right) \cdot \sin^{2a} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1}} (e^q - e^{-q})^{2a} \ell(1 - r^2 e^{-a q}) \quad (\text{V, 114}).$$

$$16) \int \operatorname{Arctg} \left(\frac{r^2 \sin s x}{1 - r^2 \cos s x} \right) \cdot \sin p x \cdot \sin^{2a+1} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} (e^q - e^{-q})^{2a+1}$$

$$(e^{pq} - e^{-pq}) \ell(1 - r^2 e^{-q'}) \left[p = \frac{1}{2} s - 2a - 1 \right] \quad (\text{V, 114}).$$

$$17) \int \operatorname{Arctg} \left(\frac{r^2 \sin s x}{1 - r^2 \cos s x} \right) \cdot \cos p x \cdot \sin^{2a} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} (e^q - e^{-q})^{2a}$$

$$(e^{pq} + e^{-pq}) \ell(1 - r^2 e^{-q'}) \left[p = \frac{1}{2} s - 2a \right] \quad (\text{V, 114}).$$

$$18) \int \operatorname{Arctg} \left(\frac{2r \sin s x}{1 - r^2} \right) \cdot \sin^{2a} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} (e^q - e^{-q})^{2a} \ell \frac{1 + r e^{-q'}}{1 - r e^{-q'}} [s > 2a], =$$

$$= \frac{(-1)^a \pi}{2^{2a+1}} \{ (e^q - e^{-q})^{2a} \ell \frac{1 + r e^{-q'}}{1 - r e^{-q'}} - 2r \} [s = 2a] \quad (\text{V, 114}).$$

$$19) \int \operatorname{Arctg} \left(\frac{2r \sin s x}{1 - r^2} \right) \cdot \sin p x \cdot \sin^{2a+1} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1}} (e^q - e^{-q})^{2a+1}$$

$$(e^{pq} - e^{-pq}) \ell \frac{1 + r e^{-q'}}{1 - r e^{-q'}} [p < s - 2a - 1], = \frac{(-1)^{a-1} \pi}{2^{2a+1}} \{ (e^q - e^{-q})^{2a+1} (e^{pq} - e^{-pq})$$

$$\ell \frac{1 + r e^{-q'}}{1 - r e^{-q'}} - 2r \} [p = s - 2a - 1] \quad (\text{V, 114}).$$

$$20) \int \operatorname{Arctg} \left(\frac{2r \sin s x}{1 - r^2} \right) \cdot \sin p x \cdot \cos^a x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{a+1} q} (e^q + e^{-q})^a (e^{pq} - e^{-pq}) \ell \frac{1 + r e^{-q'}}{1 - r e^{-q'}}$$

$$[p \leq s - a] \quad (\text{V, 114}).$$

$$21) \int \operatorname{Arctg} \left(\frac{2r \sin s x}{1 - r^2} \right) \cdot \cos p x \cdot \sin^{2a} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} (e^q - e^{-q})^{2a} (e^{pq} + e^{-pq}) \ell \frac{1 + r e^{-q'}}{1 - r e^{-q'}}$$

$$[p < s - 2a], = \frac{(-1)^a \pi}{2^{2a+1}} \{ (e^q - e^{-q})^{2a} (e^{pq} + e^{-pq}) \ell \frac{1 + r e^{-q'}}{1 - r e^{-q'}} - 2r \} [p = s - 2a]$$

(V, 114).

F. Algèbr. rat. fract. à dén. binôme;

Circ. Directe ration.;

TABLE 446, suite.

Lim. 0 et ∞.

Circ. Inverse; [$r^2 < 1$].

$$22) \int \operatorname{Arctg} \left(\frac{r \sin s x}{1 + r \cos s x} \right) \frac{x dx}{q^2 - x^2} = -\frac{\pi}{4} l(1 + 2r \cos qs + r^2) \text{ (VIII, 509).}$$

$$23) \int \operatorname{Arctg} \left(\frac{r \sin s x}{1 + r \cos s x} \right) \cdot \sin p x \frac{dx}{q^2 - x^2} = -\frac{\pi}{4q} \sin p q \cdot l(1 + 2r \cos qs + r^2) - \\ - \frac{\pi}{2q} \sum_1^d \frac{(-r)^n}{n} \sin \{(p - ns)q\} \text{ (VIII, 509).}$$

$$24) \int \operatorname{Arctg} \left(\frac{r \sin s x}{1 + r \cos s x} \right) \cdot \cos p x \frac{x dx}{q^2 - x^2} = -\frac{\pi}{4} \cos p q \cdot l(1 + 2r \cos qs + r^2) - \\ - \frac{\pi}{2} \sum_1^d \frac{(-r)^n}{n} \cos \{(p - ns)q\} \left[\frac{p}{s} \text{ fraction.} \right], = -\frac{\pi}{4} \cos p q \cdot l(1 + 2r \cos qs + r^2) - \\ - \frac{\pi}{4d} (-r)^d - \frac{\pi}{2} \sum_1^d \frac{(-r)^n}{n} \cos \{(p - ns)q\} \left[\frac{p}{s} \text{ entier} \right] \text{ (VIII, 509).}$$

Dans 23) et 24) on a $d = \mathcal{L} \frac{p}{s}$.

$$25) \int \operatorname{Arctg} \left(\frac{2r \cos x}{1 - r^2} \right) \frac{dx}{q^2 - x^2} = \frac{\pi}{4q} l \frac{1 - 2r \sin q + r^2}{1 + 2r \sin q + r^2} \text{ Bronwin, Mathem. I. 197.}$$

$$26) \int \cos^{p-1} \left(\operatorname{Arctg} \frac{x}{q} \right) \cdot \sin \left\{ (p+1) \operatorname{Arctg} \frac{x}{q} \right\} \cdot \sin r x \frac{dx}{q^2 + x^2} = \frac{\pi q^{p-1} r^p e^{-1r}}{2\Gamma(p+1)} \text{ V. T. 43, N. 12.}$$

$$27) \int \cos^{p-1} \left(\operatorname{Arctg} \frac{x}{q} \right) \cdot \cos \left\{ (p+1) \operatorname{Arctg} \frac{x}{q} \right\} \cdot \cos r x \frac{dx}{q^2 + x^2} = \frac{\pi q^{p-1} r^p e^{-1r}}{2\Gamma(p+1)} \text{ V. T. 43, N. 13.}$$

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. irrat. à fact. $\sqrt{1 - p^2 \sin^2 x}$;

TABLE 447.

Lim. 0 et ∞.

Circ. Inv. $\operatorname{Arctg} \{ \operatorname{Tg} \lambda \cdot \sqrt{1 - p^2 \sin^2 x} \}; [p^2 < 1]$.

$$1) \int \operatorname{Arctg} \{ \operatorname{Tg} \lambda \cdot \sqrt{1 - p^2 \sin^2 x} \} \cdot \sin x \cdot \sqrt{1 - p^2 \sin^2 x} \frac{dx}{x} = \frac{\pi}{2} E(p, \lambda) - \frac{\pi}{2} \cot \lambda \cdot \{ 1 - \sqrt{1 - p^2 \sin^2 \lambda} \} \\ \text{(VIII, 413).}$$

$$2) \int \operatorname{Arctg} \{ \operatorname{Tg} \lambda \cdot \sqrt{1 - p^2 \sin^2 x} \} \cdot \operatorname{Tg} x \cdot \sqrt{1 - p^2 \sin^2 x} \frac{dx}{x} = \frac{\pi}{2} E(p, \lambda) - \frac{\pi}{2} \cot \lambda \cdot \{ 1 - \sqrt{1 - p^2 \sin^2 \lambda} \} \\ \text{(VIII, 413).}$$

$$3) \int \operatorname{Arctg} \{ \operatorname{Tg} \lambda \cdot \sqrt{1 - p^2 \sin^2 2x} \} \cdot \operatorname{Tg} x \cdot \sqrt{1 - p^2 \sin^2 2x} \frac{dx}{x} = \frac{\pi}{2} E(p, \lambda) - \frac{\pi}{2} \cot \lambda \cdot \{ 1 - \sqrt{1 - p^2 \sin^2 \lambda} \} \\ \text{(VIII, 413).}$$

$$4) \int \operatorname{Arctg} \{ \operatorname{Tg} \lambda \cdot \sqrt{1 - p^2 \sin^2 x} \} \cdot \frac{\sin x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = \frac{\pi}{2} F(p, \lambda) \text{ (VIII, 406).}$$

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. irrat. à fact. $\sqrt{1-p^2 \sin^2 x}$;

TABLE 447, suite. Lim. 0 et ∞ .

Circ. Inv. $\text{Arctg}\{Tg \lambda \cdot \sqrt{1-p^2 \sin^2 x}\}; [p^2 < 1]$.

$$5) \int \text{Arctg}\{Tg \lambda \cdot \sqrt{1-p^2 \sin^2 x}\} \frac{\sin x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2} \{E(p, \lambda) - (1-p^2)F(p, \lambda)\} - \\ - \frac{\pi}{2p^2} \cot \lambda \cdot \{1 - \sqrt{1-p^2 \sin^2 \lambda}\} \quad (\text{VIII, 406}).$$

$$6) \int \text{Arctg}\{Tg \lambda \cdot \sqrt{1-p^2 \sin^2 x}\} \frac{\sin^3 x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2} \{F(p, \lambda) - E(p, \lambda)\} + \\ + \frac{\pi}{2p^2} \cot \lambda \cdot \{1 - \sqrt{1-p^2 \sin^2 \lambda}\} \quad (\text{VIII, 406}).$$

$$7) \int \text{Arctg}\{Tg \lambda \cdot \sqrt{1-p^2 \sin^2 x}\} \frac{\sin x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2} \{E(p, \lambda) - (1-p^2)F(p, \lambda)\} - \\ - \frac{\pi}{2p^2} \cot \lambda \cdot \{1 - \sqrt{1-p^2 \sin^2 \lambda}\} \quad (\text{VIII, 406}).$$

$$8) \int \text{Arctg}\{Tg \lambda \cdot \sqrt{1-p^2 \sin^2 x}\} \frac{Tgx}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{\pi}{2} F(p, \lambda) \quad (\text{VIII, 406}).$$

$$9) \int \text{Arctg}\{Tg \lambda \cdot \sqrt{1-p^2 \sin^2 x}\} \frac{\sin^2 x \cdot Tgx}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2} \{F(p, \lambda) - E(p, \lambda)\} + \\ + \frac{\pi}{2p^2} \cot \lambda \cdot \{1 - \sqrt{1-p^2 \sin^2 \lambda}\} \quad (\text{VIII, 406}).$$

$$10) \int \text{Arctg}\{Tg \lambda \cdot \sqrt{1-p^2 \sin^2 2x}\} \frac{\sin^2 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{\pi}{8p^2} \{F(p, \lambda) - E(p, \lambda)\} + \\ + \frac{\pi}{8p^2} \cot \lambda \cdot \{1 - \sqrt{1-p^2 \sin^2 \lambda}\} \quad (\text{VIII, 406}).$$

$$11) \int \text{Arctg}\{Tg \lambda \cdot \sqrt{1-p^2 \sin^2 2x}\} \frac{Tgx}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{\pi}{2} F(p, \lambda) \quad (\text{VIII, 406}).$$

$$12) \int \text{Arctg}\{Tg \lambda \cdot \sqrt{1-p^2 \sin^2 2x}\} \frac{\cos^2 2x \cdot Tgx}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{\pi}{2p^2} \{E(p, \lambda) - (1-p^2)F(p, \lambda)\} - \\ - \frac{\pi}{2p^2} \cot \lambda \cdot \{1 - \sqrt{1-p^2 \sin^2 \lambda}\} \quad (\text{VIII, 406}).$$

$$13) \int \text{Arctg}\{Tg \lambda \cdot \sqrt{1-p^2 \sin^2 x}\} \frac{\sin x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{2} \frac{\pi}{1-p^2} E(p, \lambda) - \\ - \frac{\pi Tg \lambda}{2(1-p^2)} \{ \sqrt{1-p^2 \sin^2 \lambda} - \sqrt{1-p^2} \} \quad (\text{VIII, 407}).$$

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. irrat. à fact. $\sqrt{1-p^2 \sin^2 x}$;

TABLE 447, suite. Lim. 0 et ∞ .

Circ. Inv. $\text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1-p^2 \sin^2 x} \}; [p^2 < 1]$.

$$14) \int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1-p^2 \sin^2 x} \} \frac{\sin x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2} \{ F(p, \lambda) - E(p, \lambda) \} + \\ + \frac{\pi}{2p^2} \text{Tg} \lambda \cdot \{ \sqrt{1-p^2 \sin^2 \lambda} - \sqrt{1-p^2} \} \quad (\text{VIII}, 407).$$

$$15) \int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1-p^2 \sin^2 x} \} \frac{\sin^2 x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2(1-p^2)} \{ E(p, \lambda) - (1-p^2) F(p, \lambda) \} - \\ - \frac{\pi}{2p^2(1-p^2)} \text{Tg} \lambda \cdot \{ \sqrt{1-p^2 \sin^2 \lambda} - \sqrt{1-p^2} \} \quad (\text{VIII}, 407).$$

$$16) \int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1-p^2 \sin^2 x} \} \frac{\sin x \cdot \cos^2 x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2} \{ F(p, \lambda) - E(p, \lambda) \} + \\ + \frac{\pi}{2p^2} \text{Tg} \lambda \cdot \{ \sqrt{1-p^2 \sin^2 \lambda} - \sqrt{1-p^2} \} \quad (\text{VIII}, 407).$$

$$17) \int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1-p^2 \sin^2 x} \} \frac{\text{Tg} x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{2} \frac{\pi}{1-p^2} E(p, \lambda) - \\ - \frac{\pi}{2(1-p^2)} \text{Tg} \lambda \cdot \{ \sqrt{1-p^2 \sin^2 \lambda} - \sqrt{1-p^2} \} \quad (\text{VIII}, 407).$$

$$18) \int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1-p^2 \sin^2 x} \} \frac{\sin^2 x \cdot \text{Tg} x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2(1-p^2)} \{ E(p, \lambda) - (1-p^2) F(p, \lambda) \} - \\ - \frac{\pi}{2p^2(1-p^2)} \text{Tg} \lambda \cdot \{ \sqrt{1-p^2 \sin^2 \lambda} - \sqrt{1-p^2} \} \quad (\text{VIII}, 407).$$

$$19) \int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1-p^2 \sin^2 2x} \} \frac{\sin^2 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{\pi}{8p^2(1-p^2)} \{ E(p, \lambda) - \\ - (1-p^2) F(p, \lambda) \} - \frac{\pi}{8p^2(1-p^2)} \text{Tg} \lambda \cdot \{ \sqrt{1-p^2 \sin^2 \lambda} - \sqrt{1-p^2} \} \quad (\text{VIII}, 407).$$

$$20) \int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1-p^2 \sin^2 2x} \} \frac{\text{Tg} x}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{1}{2} \frac{\pi}{1-p^2} E(p, \lambda) - \\ - \frac{\pi}{2(1-p^2)} \text{Tg} \lambda \cdot \{ \sqrt{1-p^2 \sin^2 \lambda} - \sqrt{1-p^2} \} \quad (\text{VIII}, 407).$$

$$21) \int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1-p^2 \sin^2 2x} \} \frac{\cos^2 2x \cdot \text{Tg} x}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{\pi}{2p^2} \{ F(p, \lambda) - E(p, \lambda) \} + \\ + \frac{\pi}{2p^2} \text{Tg} \lambda \cdot \{ \sqrt{1-p^2 \sin^2 \lambda} - \sqrt{1-p^2} \} \quad (\text{VIII}, 407).$$

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. irrat. à fact. $\sqrt{1-p^2 \sin^2 x}$;

Circ. Inv. $\operatorname{Arccot} \{ \operatorname{Tg} \lambda \sqrt{1-p^2 \sin^2 x} \}; [p^2 < 1]$.

TABLE 448.

Lim. 0 et ∞ .

$$1) \int \operatorname{Arccot} \{ \operatorname{Tg} \lambda \sqrt{1-p^2 \sin^2 x} \} \cdot \sin x \cdot \sqrt{1-p^2 \sin^2 x} \frac{dx}{x} = \frac{\pi}{2} E \{ p, \operatorname{Arccot} [\operatorname{Tg} \lambda \sqrt{1-p^2}] \} - \\ - \frac{\pi}{2} \operatorname{Cot} \lambda \cdot \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} \quad (\text{VIII, 413}).$$

$$2) \int \operatorname{Arccot} \{ \operatorname{Tg} \lambda \sqrt{1-p^2 \sin^2 x} \} \cdot \operatorname{Tg} x \cdot \sqrt{1-p^2 \sin^2 x} \frac{dx}{x} = \frac{\pi}{2} E \{ p, \operatorname{Arccot} [\operatorname{Tg} \lambda \sqrt{1-p^2}] \} - \\ - \frac{\pi}{2} \operatorname{Cot} \lambda \cdot \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} \quad (\text{VIII, 413}).$$

$$3) \int \operatorname{Arccot} \{ \operatorname{Tg} \lambda \sqrt{1-p^2 \sin^2 2x} \} \cdot \operatorname{Tg} x \cdot \sqrt{1-p^2 \sin^2 2x} \frac{dx}{x} = \frac{\pi}{2} E \{ p, \operatorname{Arccot} [\operatorname{Tg} \lambda \sqrt{1-p^2}] \} - \\ - \frac{\pi}{2} \operatorname{Cot} \lambda \cdot \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} \quad (\text{VIII, 413}).$$

$$4) \int \operatorname{Arccot} \{ \operatorname{Tg} \lambda \sqrt{1-p^2 \sin^2 x} \} \cdot \frac{\sin x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{\pi}{2} F \{ p, \operatorname{Arccot} [\operatorname{Tg} \lambda \sqrt{1-p^2}] \} \\ (\text{VIII, 409}).$$

$$5) \int \operatorname{Arccot} \{ \operatorname{Tg} \lambda \sqrt{1-p^2 \sin^2 x} \} \cdot \frac{\sin x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2} \left\{ E \{ p, \operatorname{Arccot} [\operatorname{Tg} \lambda \sqrt{1-p^2}] \} - \right. \\ \left. - (1-p^2) F \{ p, \operatorname{Arccot} [\operatorname{Tg} \lambda \sqrt{1-p^2}] \} \right\} - \frac{\pi}{2p^2} \operatorname{Cot} \lambda \cdot \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} \quad (\text{VIII, 410}).$$

$$6) \int \operatorname{Arccot} \{ \operatorname{Tg} \lambda \sqrt{1-p^2 \sin^2 x} \} \cdot \frac{\sin^2 x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2} \left\{ F \{ p, \operatorname{Arccot} [\operatorname{Tg} \lambda \sqrt{1-p^2}] \} - \right. \\ \left. - E \{ p, \operatorname{Arccot} [\operatorname{Tg} \lambda \sqrt{1-p^2}] \} \right\} + \frac{\pi}{2p^2} \operatorname{Cot} \lambda \cdot \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} \quad (\text{VIII, 409}).$$

$$7) \int \operatorname{Arccot} \{ \operatorname{Tg} \lambda \sqrt{1-p^2 \sin^2 x} \} \cdot \frac{\sin x \cdot \cos^2 x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2} \left\{ E \{ p, \operatorname{Arccot} [\operatorname{Tg} \lambda \sqrt{1-p^2}] \} - \right. \\ \left. - (1-p^2) F \{ p, \operatorname{Arccot} [\operatorname{Tg} \lambda \sqrt{1-p^2}] \} \right\} - \frac{\pi}{2p^2} \operatorname{Cot} \lambda \cdot \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} \quad (\text{VIII, 410}).$$

$$8) \int \operatorname{Arccot} \{ \operatorname{Tg} \lambda \sqrt{1-p^2 \sin^2 x} \} \cdot \frac{\operatorname{Tg} x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{\pi}{2} F \{ p, \operatorname{Arccot} [\operatorname{Tg} \lambda \sqrt{1-p^2}] \} \\ (\text{VIII, 410}).$$

$$9) \int \operatorname{Arccot} \{ \operatorname{Tg} \lambda \sqrt{1-p^2 \sin^2 x} \} \cdot \frac{\sin^2 x \cdot \operatorname{Tg} x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2} \left\{ F \{ p, \operatorname{Arccot} [\operatorname{Tg} \lambda \sqrt{1-p^2}] \} - \right. \\ \left. - E \{ p, \operatorname{Arccot} [\operatorname{Tg} \lambda \sqrt{1-p^2}] \} \right\} + \frac{\pi}{2p^2} \operatorname{Cot} \lambda \cdot \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} \quad (\text{VIII, 409}).$$

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. irrat. à fact. $\sqrt{1-p^2 \sin^2 x}$;

TABLE 448, suite. Lim. 0 et ∞ .

Circ. Inv. $\operatorname{Arccot} \{Tg \lambda. \sqrt{1-p^2 \sin^2 x}\}; [p^2 < 1]$.

$$10) \int \operatorname{Arccot} \{Tg \lambda. \sqrt{1-p^2 \sin^2 2x}\} \frac{\sin^2 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{\pi}{8p^2} \{F\{p, \operatorname{Arccot}[Tg \lambda. \sqrt{1-p^2}]\} - \\ - E\{p, \operatorname{Arccot}[Tg \lambda. \sqrt{1-p^2}]\}\} + \frac{\pi}{8p^2} \cot \lambda. \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} \quad (\text{VIII, 409}).$$

$$11) \int \operatorname{Arccot} \{Tg \lambda. \sqrt{1-p^2 \sin^2 2x}\} \frac{Tg x}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{\pi}{2} F\{p, \operatorname{Arccot}[Tg \lambda. \sqrt{1-p^2}]\} \\ (\text{VIII, 410}).$$

$$12) \int \operatorname{Arccot} \{Tg \lambda. \sqrt{1-p^2 \sin^2 2x}\} \frac{\cos^2 2x \cdot Tg x}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{\pi}{2p^2} \{E\{p, \operatorname{Arccot}[Tg \lambda. \sqrt{1-p^2}]\} - \\ - (1-p^2) F\{p, \operatorname{Arccot}[Tg \lambda. \sqrt{1-p^2}]\}\} - \frac{\pi}{2p^2} \cot \lambda. \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} \quad (\text{VIII, 410}).$$

$$13) \int \operatorname{Arccot} \{Tg \lambda. \sqrt{1-p^2 \sin^2 x}\} \frac{\sin x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{2} \frac{\pi}{1-p^2} E\{p, \operatorname{Arccot}[Tg \lambda. \sqrt{1-p^2}]\} - \\ - \frac{\pi}{2\sqrt{1-p^2}} Tg \lambda. \left\{ 1 - \sqrt{\frac{1-p^2}{1-p^2 \sin^2 \lambda}} \right\} \quad (\text{VIII, 410}).$$

$$14) \int \operatorname{Arccot} \{Tg \lambda. \sqrt{1-p^2 \sin^2 x}\} \frac{\sin x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2} \{F\{p, \operatorname{Arccot}[Tg \lambda. \sqrt{1-p^2}]\} - \\ - E\{p, \operatorname{Arccot}[Tg \lambda. \sqrt{1-p^2}]\}\} + \frac{\pi \sqrt{1-p^2}}{2p^2} Tg \lambda. \left\{ 1 - \sqrt{\frac{1-p^2}{1-p^2 \sin^2 \lambda}} \right\} \quad (\text{VIII, 411}).$$

$$15) \int \operatorname{Arccot} \{Tg \lambda. \sqrt{1-p^2 \sin^2 x}\} \frac{\sin^2 x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2(1-p^2)} \\ \{E\{p, \operatorname{Arccot}[Tg \lambda. \sqrt{1-p^2}]\} - (1-p^2) F\{p, \operatorname{Arccot}[Tg \lambda. \sqrt{1-p^2}]\}\} - \\ - \frac{\pi}{2p^2 \sqrt{1-p^2}} Tg \lambda. \left\{ 1 - \sqrt{\frac{1-p^2}{1-p^2 \sin^2 \lambda}} \right\} \quad (\text{VIII, 410}).$$

$$16) \int \operatorname{Arccot} \{Tg \lambda. \sqrt{1-p^2 \sin^2 x}\} \frac{\sin x \cdot \cos^2 x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2} \{F\{p, \operatorname{Arccot}[Tg \lambda. \sqrt{1-p^2}]\} - \\ - E\{p, \operatorname{Arccot}[Tg \lambda. \sqrt{1-p^2}]\}\} + \frac{\pi \sqrt{1-p^2}}{2p^2} Tg \lambda. \left\{ 1 - \sqrt{\frac{1-p^2}{1-p^2 \sin^2 \lambda}} \right\} \quad (\text{VIII, 411}).$$

$$17) \int \operatorname{Arccot} \{Tg \lambda. \sqrt{1-p^2 \sin^2 x}\} \frac{Tg x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{1}{2} \frac{\pi}{1-p^2} E\{p, \operatorname{Arccot}[Tg \lambda. \sqrt{1-p^2}]\} - \\ - \frac{\pi}{2\sqrt{1-p^2}} Tg \lambda. \left\{ 1 - \sqrt{\frac{1-p^2}{1-p^2 \sin^2 \lambda}} \right\} \quad (\text{VIII, 410}).$$

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. irrat. à fact. $\sqrt{1-p^2 \sin^2 x}$;

TABLE 448, suite. Lim. 0 et ∞ .

Circ. Inv. $\operatorname{Arccot} \{Tg \lambda . \sqrt{1-p^2 \sin^2 x}\}; [p^2 < 1]$.

$$18) \int \operatorname{Arccot} \{Tg \lambda . \sqrt{1-p^2 \sin^2 x}\} \frac{\sin^2 x . Tg x}{\sqrt{1-p^2 \sin^2 x}} \frac{dx}{x} = \frac{\pi}{2 p^2 (1-p^2)} \left\{ E \{p, \operatorname{Arccot} [Tg \lambda . \sqrt{1-p^2}] \} - \right. \\ \left. - (1-p^2) F \{p, \operatorname{Arccot} [Tg \lambda . \sqrt{1-p^2}] \} \right\} - \frac{\pi Tg \lambda}{2 p^2 \sqrt{1-p^2}} \left\{ 1 - \sqrt{\frac{1-p^2}{1-p^2 \sin^2 \lambda}} \right\} \quad (\text{VIII, 410}).$$

$$19) \int \operatorname{Arccot} \{Tg \lambda . \sqrt{1-p^2 \sin^2 2x}\} \frac{\sin^2 x . \cos x}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{\pi}{8 p^2 (1-p^2)} \\ \left\{ E \{p, \operatorname{Arccot} [Tg \lambda . \sqrt{1-p^2}] \} - (1-p^2) F \{p, \operatorname{Arccot} [Tg \lambda . \sqrt{1-p^2}] \} \right\} - \\ - \frac{\pi Tg \lambda}{8 p^2 \sqrt{1-p^2}} \left\{ 1 - \sqrt{\frac{1-p^2}{1-p^2 \sin^2 \lambda}} \right\} \quad (\text{VIII, 410}).$$

$$20) \int \operatorname{Arccot} \{Tg \lambda . \sqrt{1-p^2 \sin^2 2x}\} \frac{Tg x}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{1}{2} \frac{\pi}{1-p^2} E \{p, \operatorname{Arccot} [Tg \lambda . \sqrt{1-p^2}] \} - \\ - \frac{\pi Tg \lambda}{2 \sqrt{1-p^2}} \left\{ 1 - \sqrt{\frac{1-p^2}{1-p^2 \sin^2 \lambda}} \right\} \quad (\text{VIII, 410}).$$

$$21) \int \operatorname{Arccot} \{Tg \lambda . \sqrt{1-p^2 \sin^2 2x}\} \frac{\cos^2 2x . Tg x}{\sqrt{1-p^2 \sin^2 2x}} \frac{dx}{x} = \frac{\pi}{2 p^2} \left\{ F \{p, \operatorname{Arccot} [Tg \lambda . \sqrt{1-p^2}] \} - \right. \\ \left. - E \{p, \operatorname{Arccot} [Tg \lambda . \sqrt{1-p^2}] \} \right\} + \frac{\pi \sqrt{1-p^2}}{2 p^2} Tg \lambda . \left\{ 1 - \sqrt{\frac{1-p^2}{1-p^2 \sin^2 \lambda}} \right\} \quad (\text{VIII, 411}).$$

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. irrat. à fact. $\sqrt{1-p^2 \cos^2 x}$;

TABLE 449.

Lim. 0 et ∞ .

Circ. Inv. $\operatorname{Arctg} \{Tg \lambda . \sqrt{1-p^2 \cos^2 x}\}; [p^2 < 1]$.

$$1) \int \operatorname{Arctg} \{Tg \lambda . \sqrt{1-p^2 \cos^2 x}\} . \sin x . \sqrt{1-p^2 \cos^2 x} \frac{dx}{x} = \frac{\pi}{2} E(p, \lambda) - \\ - \frac{\pi}{2} \cot \lambda . \left\{ 1 - \sqrt{1-p^2 \sin^2 \lambda} \right\} \quad (\text{VIII, 418}).$$

$$2) \int \operatorname{Arctg} \{Tg \lambda . \sqrt{1-p^2 \cos^2 x}\} . Tg x . \sqrt{1-p^2 \cos^2 x} \frac{dx}{x} = \frac{\pi}{2} E(p, \lambda) - \\ - \frac{\pi}{2} \cot \lambda . \left\{ 1 - \sqrt{1-p^2 \sin^2 \lambda} \right\} \quad (\text{VIII, 418}).$$

$$3) \int \operatorname{Arctg} \{Tg \lambda . \sqrt{1-p^2 \cos^2 2x}\} . Tg x . \sqrt{1-p^2 \cos^2 2x} \frac{dx}{x} = \frac{\pi}{2} E(p, \lambda) - \\ - \frac{\pi}{2} \cot \lambda . \left\{ 1 - \sqrt{1-p^2 \sin^2 \lambda} \right\} \quad (\text{VIII, 418}).$$

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. irrat. à fact. $\sqrt{1-p^2 \cos^2 x}$;

TABLE 449, suite. Lim. 0 et ∞ .

Circ. Inv. *Arctg*. $\{Tg \lambda. \sqrt{1-p^2 \cos^2 x}\}; [p^2 < 1]$.

$$4) \int \text{Arctg} \{Tg \lambda. \sqrt{1-p^2 \cos^2 x}\} \frac{\sin x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{\pi}{2} F(p, \lambda) \text{ (VIII, 408).}$$

$$5) \int \text{Arctg} \{Tg \lambda. \sqrt{1-p^2 \cos^2 x}\} \frac{\sin x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2} \{F(p, \lambda) - E(p, \lambda)\} + \\ + \frac{\pi}{2p^2} \cot \lambda \cdot \{1 - \sqrt{1-p^2 \sin^2 \lambda}\} \text{ (VIII, 408).}$$

$$6) \int \text{Arctg} \{Tg \lambda. \sqrt{1-p^2 \cos^2 x}\} \frac{\sin^3 x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2} \{E(p, \lambda) - (1-p^2)F(p, \lambda)\} - \\ - \frac{\pi}{2p^2} \cot \lambda \cdot \{1 - \sqrt{1-p^2 \sin^2 \lambda}\} \text{ (VIII, 408).}$$

$$7) \int \text{Arctg} \{Tg \lambda. \sqrt{1-p^2 \cos^2 x}\} \frac{\sin x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2} \{F(p, \lambda) - E(p, \lambda)\} + \\ + \frac{\pi}{2p^2} \cot \lambda \cdot \{1 - \sqrt{1-p^2 \sin^2 \lambda}\} \text{ (VIII, 408).}$$

$$8) \int \text{Arctg} \{Tg \lambda. \sqrt{1-p^2 \cos^2 x}\} \frac{Tgx}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{\pi}{2} F(p, \lambda) \text{ (VIII, 408).}$$

$$9) \int \text{Arctg} \{Tg \lambda. \sqrt{1-p^2 \cos^2 x}\} \frac{\sin^3 x \cdot Tgx}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2} \{E(p, \lambda) - (1-p^2)F(p, \lambda)\} - \\ - \frac{\pi}{2p^2} \cot \lambda \cdot \{1 - \sqrt{1-p^2 \sin^2 \lambda}\} \text{ (VIII, 408).}$$

$$10) \int \text{Arctg} \{Tg \lambda. \sqrt{1-p^2 \cos^2 2x}\} \frac{\sin^3 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{\pi}{2p^2} \{E(p, \lambda) - (1-p^2)F(p, \lambda)\} - \\ - \frac{\pi}{8p^2} \cot \lambda \cdot \{1 - \sqrt{1-p^2 \sin^2 \lambda}\} \text{ (VIII, 408).}$$

$$11) \int \text{Arctg} \{Tg \lambda. \sqrt{1-p^2 \cos^2 2x}\} \frac{Tgx}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{\pi}{2} F(p, \lambda) \text{ (VIII, 408).}$$

$$12) \int \text{Arctg} \{Tg \lambda. \sqrt{1-p^2 \cos^2 2x}\} \frac{\cos^3 2x \cdot Tgx}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{\pi}{2p^2} \{F(p, \lambda) - E(p, \lambda)\} + \\ + \frac{\pi}{2p^2} \cot \lambda \cdot \{1 - \sqrt{1-p^2 \sin^2 \lambda}\} \text{ (VIII, 408).}$$

$$13) \int \text{Arctg} \{Tg \lambda. \sqrt{1-p^2 \cos^2 x}\} \frac{\sin x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{2} \frac{\pi}{1-p^2} E(p, \lambda) - \\ - \frac{\pi Tg \lambda}{2 \sqrt{1-p^2}} \left\{ \sqrt{\frac{1-p^2 \sin^2 \lambda}{1-p^2}} - 1 \right\} \text{ (VIII, 409).}$$

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. irrat. à fact. $\sqrt{1-p^2 \cos^2 x}$;

TABLE 449, suite. Lim. 0 et ∞ .

Circ. Inv. $\text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1-p^2 \cos^2 x} \}; [p^2 < 1]$.

$$14) \int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1-p^2 \cos^2 x} \} \frac{\sin x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2(1-p^2)} \{ E(p, \lambda) - (1-p^2) F(p, \lambda) \} - \\ - \frac{\pi \text{Tg} \lambda}{2p^2 \sqrt{1-p^2}} \left\{ \sqrt{\frac{1-p^2 \sin^2 \lambda}{1-p^2}} - 1 \right\} \text{ (VIII, 409).}$$

$$15) \int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1-p^2 \cos^2 x} \} \frac{\sin^2 x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2} \{ F(p, \lambda) - E(p, \lambda) \} + \\ + \frac{\pi}{2p^2} \text{Tg} \lambda \cdot \sqrt{1-p^2} \left\{ \sqrt{\frac{1-p^2 \sin^2 \lambda}{1-p^2}} - 1 \right\} \text{ (VIII, 408).}$$

$$16) \int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1-p^2 \cos^2 x} \} \frac{\sin x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2(1-p^2)} \{ E(p, \lambda) - (1-p^2) F(p, \lambda) \} - \\ - \frac{\pi \text{Tg} \lambda}{2p^2 \sqrt{1-p^2}} \left\{ \sqrt{\frac{1-p^2 \sin^2 \lambda}{1-p^2}} - 1 \right\} \text{ (VIII, 409).}$$

$$17) \int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1-p^2 \cos^2 x} \} \frac{\text{Tg} x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{2} \frac{\pi}{1-p^2} E(p, \lambda) - \\ - \frac{\pi \text{Tg} \lambda}{2 \sqrt{1-p^2}} \left\{ \sqrt{\frac{1-p^2 \sin^2 \lambda}{1-p^2}} - 1 \right\} \text{ (VIII, 409).}$$

$$18) \int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1-p^2 \cos^2 x} \} \frac{\sin^2 x \cdot \text{Tg} x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2} \{ F(p, \lambda) - E(p, \lambda) \} + \\ + \frac{\pi}{2p^2} \text{Tg} \lambda \cdot \sqrt{1-p^2} \left\{ \sqrt{\frac{1-p^2 \sin^2 \lambda}{1-p^2}} - 1 \right\} \text{ (VIII, 408).}$$

$$19) \int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1-p^2 \cos^2 2x} \} \frac{\sin^2 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{\pi}{8p^2} \{ F(p, \lambda) - E(p, \lambda) \} + \\ + \frac{\pi}{8p^2} \text{Tg} \lambda \cdot \sqrt{1-p^2} \left\{ \sqrt{\frac{1-p^2 \sin^2 \lambda}{1-p^2}} - 1 \right\} \text{ (VIII, 408).}$$

$$20) \int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1-p^2 \cos^2 2x} \} \frac{\text{Tg} x}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{1}{2} \frac{\pi}{1-p^2} E(p, \lambda) - \\ - \frac{\pi \text{Tg} \lambda}{2 \sqrt{1-p^2}} \left\{ \sqrt{\frac{1-p^2 \sin^2 \lambda}{1-p^2}} - 1 \right\} \text{ (VIII, 409).}$$

$$21) \int \text{Arctg} \{ \text{Tg} \lambda \cdot \sqrt{1-p^2 \cos^2 2x} \} \frac{\cos^2 2x \cdot \text{Tg} x}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{\pi}{2p^2(1-p^2)} \{ E(p, \lambda) - \\ - (1-p^2) F(p, \lambda) \} - \frac{\pi \text{Tg} \lambda}{2p^2 \sqrt{1-p^2}} \left\{ \sqrt{\frac{1-p^2 \sin^2 \lambda}{1-p^2}} - 1 \right\} \text{ (VIII, 409).}$$

$$1) \int \operatorname{Arccot} \{Tg \lambda . \sqrt{1-p^2 \cos^2 x}\} . \sin x . \sqrt{1-p^2 \cos^2 x} \frac{dx}{x} = \frac{\pi}{2} E \{p, \operatorname{Arccot} [Tg \lambda . \sqrt{1-p^2}]\} - \\ - \frac{\pi}{2} \cot \lambda . \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} \text{ (VIII, 414).}$$

$$2) \int \operatorname{Arccot} \{Tg \lambda . \sqrt{1-p^2 \cos^2 x}\} . Tg x . \sqrt{1-p^2 \cos^2 x} \frac{dx}{x} = \frac{\pi}{2} E \{p, \operatorname{Arccot} [Tg \lambda . \sqrt{1-p^2}]\} - \\ - \frac{\pi}{2} \cot \lambda . \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} \text{ (VIII, 414).}$$

$$3) \int \operatorname{Arccot} \{Tg \lambda . \sqrt{1-p^2 \cos^2 2x}\} . Tg x . \sqrt{1-p^2 \cos^2 2x} \frac{dx}{x} = \frac{\pi}{2} E \{p, \operatorname{Arccot} [Tg \lambda . \sqrt{1-p^2}]\} - \\ - \frac{\pi}{2} \cot \lambda . \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} \text{ (VIII, 414).}$$

$$4) \int \operatorname{Arccot} \{Tg \lambda . \sqrt{1-p^2 \cos^2 x}\} \frac{\sin x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{\pi}{2} F \{p, \operatorname{Arccot} [Tg \lambda . \sqrt{1-p^2}]\} \\ \text{ (VIII, 411).}$$

$$5) \int \operatorname{Arccot} \{Tg \lambda . \sqrt{1-p^2 \cos^2 x}\} \frac{\sin x . \cos x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{\pi}{2 p^2} \left\{ F \{p, \operatorname{Arccot} [Tg \lambda . \sqrt{1-p^2}]\} - \right. \\ \left. - E \{p, \operatorname{Arccot} [Tg \lambda . \sqrt{1-p^2}]\} \right\} + \frac{\pi}{2 p^2} \cot \lambda . \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} \text{ (VIII, 412).}$$

$$6) \int \operatorname{Arccot} \{Tg \lambda . \sqrt{1-p^2 \cos^2 x}\} \frac{\sin^2 x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{\pi}{2 p^2} \left\{ E \{p, \operatorname{Arccot} [Tg \lambda . \sqrt{1-p^2}]\} - \right. \\ \left. - (1-p^2) F \{p, \operatorname{Arccot} [Tg \lambda . \sqrt{1-p^2}]\} \right\} - \frac{\pi}{2 p^2} \cot \lambda . \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} \text{ (VIII, 411).}$$

$$7) \int \operatorname{Arccot} \{Tg \lambda . \sqrt{1-p^2 \cos^2 x}\} \frac{\sin x . \cos^2 x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{\pi}{2 p^2} \left\{ F \{p, \operatorname{Arccot} [Tg \lambda . \sqrt{1-p^2}]\} - \right. \\ \left. - E \{p, \operatorname{Arccot} [Tg \lambda . \sqrt{1-p^2}]\} \right\} + \frac{\pi}{2 p^2} \cot \lambda . \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} \text{ (VIII, 412).}$$

$$8) \int \operatorname{Arccot} \{Tg \lambda . \sqrt{1-p^2 \cos^2 x}\} \frac{Tg x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{\pi}{2} F \{p, \operatorname{Arccot} [Tg \lambda . \sqrt{1-p^2}]\} \\ \text{ (VIII, 411).}$$

$$9) \int \operatorname{Arccot} \{Tg \lambda . \sqrt{1-p^2 \cos^2 x}\} \frac{\sin^2 x . Tg x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{\pi}{2 p^2} \left\{ E \{p, \operatorname{Arccot} [Tg \lambda . \sqrt{1-p^2}]\} - \right. \\ \left. - (1-p^2) F \{p, \operatorname{Arccot} [Tg \lambda . \sqrt{1-p^2}]\} \right\} - \frac{\pi}{2 p^2} \cot \lambda . \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} \text{ (VIII, 411).}$$

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. irrat. à fact. $\sqrt{1-p^2 \cos^2 x}$;

TABLE 450, suite. Lim. 0 et ∞ .

Circ. Inv. $\operatorname{Arccot} \{Tg \lambda \cdot \sqrt{1-p^2 \cos^2 x}\}; [p^2 < 1]$.

$$10) \int \operatorname{Arccot} \{Tg \lambda \cdot \sqrt{1-p^2 \cos^2 2x}\} \frac{\sin^2 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{\pi}{8p^2} \left\{ E\{p, \operatorname{Arccot}[Tg \lambda \cdot \sqrt{1-p^2}]\} - (1-p^2) F\{p, \operatorname{Arccot}[Tg \lambda \cdot \sqrt{1-p^2}]\} \right\} - \frac{\pi}{8p^2} \cot \lambda \cdot \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} \quad (\text{VIII, 411}).$$

$$11) \int \operatorname{Arccot} \{Tg \lambda \cdot \sqrt{1-p^2 \cos^2 2x}\} \frac{Tgx}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{\pi}{2} F\{p, \operatorname{Arccot}[Tg \lambda \cdot \sqrt{1-p^2}]\} \quad (\text{VIII, 411}).$$

$$12) \int \operatorname{Arccot} \{Tg \lambda \cdot \sqrt{1-p^2 \cos^2 2x}\} \frac{\cos^2 2x \cdot Tgx}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{\pi}{2p^2} \left\{ F\{p, \operatorname{Arccot}[Tg \lambda \cdot \sqrt{1-p^2}]\} - E\{p, \operatorname{Arccot}[Tg \lambda \cdot \sqrt{1-p^2}]\} \right\} + \frac{\pi}{2p^2} \cot \lambda \cdot \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} \quad (\text{VIII, 412}).$$

$$13) \int \operatorname{Arccot} \{Tg \lambda \cdot \sqrt{1-p^2 \cos^2 x}\} \frac{\sin x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{2} \frac{\pi}{1-p^2} E\{p, \operatorname{Arccot}[Tg \lambda \cdot \sqrt{1-p^2}]\} - \frac{\pi Tg \lambda}{2 \sqrt{1-p^2}} \left\{ 1 - \sqrt{\frac{1-p^2}{1-p^2 \sin^2 \lambda}} \right\} \quad (\text{VIII, 412}).$$

$$14) \int \operatorname{Arccot} \{Tg \lambda \cdot \sqrt{1-p^2 \cos^2 x}\} \frac{\sin x \cdot \cos x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2(1-p^2)} \left\{ E\{p, \operatorname{Arccot}[Tg \lambda \cdot \sqrt{1-p^2}]\} - (1-p^2) F\{p, \operatorname{Arccot}[Tg \lambda \cdot \sqrt{1-p^2}]\} \right\} - \frac{\pi Tg \lambda}{2p^2 \sqrt{1-p^2}} \left\{ 1 - \sqrt{\frac{1-p^2}{1-p^2 \sin^2 \lambda}} \right\} \quad (\text{VIII, 413}).$$

$$15) \int \operatorname{Arccot} \{Tg \lambda \cdot \sqrt{1-p^2 \cos^2 x}\} \frac{\sin^3 x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2} \left\{ F\{p, \operatorname{Arccot}[Tg \lambda \cdot \sqrt{1-p^2}]\} - E\{p, \operatorname{Arccot}[Tg \lambda \cdot \sqrt{1-p^2}]\} \right\} + \frac{\pi \sqrt{1-p^2}}{2p^2} Tg \lambda \cdot \left\{ 1 - \sqrt{\frac{1-p^2}{1-p^2 \sin^2 \lambda}} \right\} \quad (\text{VIII, 412}).$$

$$16) \int \operatorname{Arccot} \{Tg \lambda \cdot \sqrt{1-p^2 \cos^2 x}\} \frac{\sin x \cdot \cos^2 x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2(1-p^2)} \left\{ E\{p, \operatorname{Arccot}[Tg \lambda \cdot \sqrt{1-p^2}]\} - (1-p^2) F\{p, \operatorname{Arccot}[Tg \lambda \cdot \sqrt{1-p^2}]\} \right\} - \frac{\pi Tg \lambda}{2p^2 \sqrt{1-p^2}} \left\{ 1 - \sqrt{\frac{1-p^2}{1-p^2 \sin^2 \lambda}} \right\} \quad (\text{VIII, 413}).$$

$$17) \int \operatorname{Arccot} \{Tg \lambda \cdot \sqrt{1-p^2 \cos^2 x}\} \frac{Tgx}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{1}{2} \frac{\pi}{1-p^2} E\{p, \operatorname{Arccot}[Tg \lambda \cdot \sqrt{1-p^2}]\} - \frac{\pi Tg \lambda}{2 \sqrt{1-p^2}} \left\{ 1 - \sqrt{\frac{1-p^2}{1-p^2 \sin^2 \lambda}} \right\} \quad (\text{VIII, 412}).$$

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. irrat. à fact. $\sqrt{1-p^2 \cos^2 x}$;

TABLE 450, suite. Lim. 0 et ∞ .

Circ. Inv. $\operatorname{Arccot} \{Tg \lambda . \sqrt{1-p^2 \operatorname{Cos}^2 x}\}; [p^2 < 1].$

$$48) \int \operatorname{Arccot} \{Tg \lambda \cdot \sqrt{1-p^2 \cos^2 x}\} \frac{\sin^2 x \cdot Tg x}{\sqrt{1-p^2 \cos^2 x}} \frac{dx}{x} = \frac{\pi}{2p^2} \{F\{p, \operatorname{Arccot}[Tg \lambda \cdot \sqrt{1-p^2}]\} - \\ - E\{p, \operatorname{Arccot}[Tg \lambda \cdot \sqrt{1-p^2}]\}\} + \frac{\pi \sqrt{1-p^2}}{2p^2} Tg \lambda \cdot \left\{1 - \sqrt{\frac{1-p^2}{1-p^2 \sin^2 \lambda}}\right\} \quad (\text{VIII}, 418).$$

$$49) \int \operatorname{Arccot} \{ Tg \lambda \cdot \sqrt{1-p^2 \cos^2 2x} \} \frac{\sin^2 x \cdot \cos x}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{\pi}{8p^2} \left\{ F \{ p, \operatorname{Arccot} [Tg \lambda \cdot \sqrt{1-p^2}] \} - \right. \\ \left. - E \{ p, \operatorname{Arccot} [Tg \lambda \cdot \sqrt{1-p^2}] \} \right\} + \frac{\pi \sqrt{1-p^2}}{8p^2} Tg \lambda \cdot \left\{ 1 - \sqrt{\frac{1-p^2}{1-p^2 \sin^2 \lambda}} \right\} \quad (\text{VIII}, 412).$$

$$20) \int \operatorname{Arccot} \{Tg \lambda \cdot \sqrt{1-p^2} \cos^2 2x\} \frac{Tg x}{\sqrt{1-p^2} \cos^2 2x} \cdot \frac{dx}{x} = \frac{1}{2} \frac{\pi}{1-p^2} E\{p, \operatorname{Arccot} [Tg \lambda \cdot \sqrt{1-p^2}]\} - \frac{\pi Tg \lambda}{2 \sqrt{1-p^2}} \left\{1 - \sqrt{\frac{1-p^2}{1-p^2 \sin^2 \lambda}}\right\} \quad (\text{VIII}, 412).$$

$$21) \int \operatorname{Arccot}\{Tg \lambda . \sqrt{1-p^2 \cos^2 2x}\} \frac{\cos^2 2x . Tg x}{\sqrt{1-p^2 \cos^2 2x}} \frac{dx}{x} = \frac{\pi}{2p^2(1-p^2)} \left\{ E\{p, \operatorname{Arccot}[Tg \lambda . \sqrt{1-p^2}]\} - \right. \\ \left. - (1-p^2) F\{p, \operatorname{Arccot}[Tg \lambda . \sqrt{1-p^2}]\} \right\} - \frac{\pi Tg \lambda}{2p^2 \sqrt{1-p^2}} \left\{ 1 - \sqrt{\frac{1-p^2}{1-p^2 \sin^2 \lambda}} \right\} \\ \textcircled{\text{VIII}}, 413).$$

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. irrat. à fact. $(1 + 2p \cos x + p^2)^{\frac{1}{2}}$; TABLE 451.

Lim. 0 et ∞ .

Circulaire Inverse.

$$4) \int (1 + 2p \cos x + p^2)^{\frac{1}{2}r} \sin \left\{ r \operatorname{Arccos} \left(\frac{1 + p \cos x}{\sqrt{1 + 2p \cos x + p^2}} \right) \right\} \frac{dx}{x} = \frac{\pi}{2} \{(1 + p)^r - 1\} \quad (\text{VIII, 640}).$$

$$2) \int (1 + 2p \cos x + p^2)^{\frac{1}{2}r} \sin \left\{ ax + r \operatorname{Arccos} \left(\frac{1 + p \cos x}{\sqrt{1 + 2p \cos x + p^2}} \right) \right\} \frac{dx}{x} = \frac{\pi}{2} (1 + p)^r \quad (\text{VIII, 639}).$$

$$3) \int (1 + 2p \cos x + p^2)^{-r} \sin \left\{ r \operatorname{Arccos} \left(\frac{1 + p \cos x}{\sqrt{1 + 2p \cos x + p^2}} \right) \right\} \cdot \cos x \frac{dx}{x} = \frac{\pi}{2} \sum_{n=0}^{\infty} \binom{r}{n} p^n \quad (\text{VIII, 639}).$$

$$4) \int (1 + 2p \cos x + p^2)^{\frac{1}{2}r} \cos \left\{ r \operatorname{Arccos} \left(\frac{1 + p \cos x}{\sqrt{1 + 2p \cos x + p^2}} \right) \right\} \cdot \sin ax \frac{dx}{x} = \frac{\pi}{2} \sum_{n=0}^{\infty} \binom{r}{n} p^n \quad (\text{VIII, 638})$$

$$5) \int (1 + 2p \cos 2x + p^2)^{\frac{1}{2}a} (p^2 + 2pq \cos 2x + q^2)^{\frac{1}{2}c} \sin \left\{ a \operatorname{Arccos} \left(\frac{1 + p \cos 2x}{\sqrt{1 + 2p \cos 2x + p^2}} \right) \right\}.$$

$$\sin \left\{ c \operatorname{Arccos} \left(\frac{p + q \cos 2x}{\sqrt{p^2 + 2pq \cos 2x + q^2}} \right) \right\} \cdot \sin x \frac{dx}{x} = \frac{\pi}{2} p^c \sum_1 \binom{a}{n} \binom{c}{n} q^n \text{ (VIII, 415).}$$

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. irrat. à fact. $(1 + 2p \cos x + p^2)^{\frac{1}{2}a}$; TABLE 451, suite. Lim. 0 et ∞ .

Circulaire Inverse.

- 6) $\int (1 + 2p \cos 2x + p^2)^{\frac{1}{2}a} (p^2 + 2pq \cos 2x + q^2)^{\frac{1}{2}c} \sin \left\{ a \operatorname{Arccos} \left(\frac{1 + p \cos 2x}{\sqrt{1 + 2p \cos 2x + p^2}} \right) \right\} \cdot \sin \left\{ c \operatorname{Arccos} \left(\frac{p + q \cos 2x}{\sqrt{p^2 + 2pq \cos 2x + q^2}} \right) \right\} \cdot \operatorname{Tgx} \frac{dx}{x} = \frac{\pi}{2} p^c \sum_1^{\infty} \binom{a}{n} \binom{c}{n} q^n \text{ (VIII, 415).}$
- 7) $\int (1 + 2p \cos 4x + p^2)^{\frac{1}{2}a} (p^2 + 2pq \cos 4x + q^2)^{\frac{1}{2}c} \sin \left\{ a \operatorname{Arccos} \left(\frac{1 + p \cos 4x}{\sqrt{1 + 2p \cos 4x + p^2}} \right) \right\} \cdot \sin \left\{ c \operatorname{Arccos} \left(\frac{p + q \cos 4x}{\sqrt{p^2 + 2pq \cos 4x + q^2}} \right) \right\} \cdot \operatorname{Tgx} \frac{dx}{x} = \frac{\pi}{2} p^c \sum_1^{\infty} \binom{a}{n} \binom{c}{n} q^n \text{ (VIII, 415).}$
- 8) $\int (1 + 2p \cos 2x + p^2)^{\frac{1}{2}a} (p^2 + 2pq \cos 2x + q^2)^{\frac{1}{2}c} \cos \left\{ a \operatorname{Arccos} \left(\frac{1 + p \cos 2x}{\sqrt{1 + 2p \cos 2x + p^2}} \right) \right\} \cdot \cos \left\{ c \operatorname{Arccos} \left(\frac{p + q \cos 2x}{\sqrt{p^2 + 2pq \cos 2x + q^2}} \right) \right\} \cdot \sin x \frac{dx}{x} = \frac{\pi}{2} p^c \left\{ 2 + \sum_1^{\infty} \binom{a}{n} \binom{c}{n} q^n \right\} \text{ (VIII, 416).}$
- 9) $\int (1 + 2p \cos 2x + p^2)^{\frac{1}{2}a} (p^2 + 2pq \cos 2x + q^2)^{\frac{1}{2}c} \cos \left\{ a \operatorname{Arccos} \left(\frac{1 + p \cos 2x}{\sqrt{1 + 2p \cos 2x + p^2}} \right) \right\} \cdot \cos \left\{ c \operatorname{Arccos} \left(\frac{p + q \cos 2x}{\sqrt{p^2 + 2pq \cos 2x + q^2}} \right) \right\} \cdot \operatorname{Tgx} \frac{dx}{x} = \frac{\pi}{2} p^c \left\{ 2 + \sum_1^{\infty} \binom{a}{n} \binom{c}{n} q^n \right\} \text{ (VIII, 416).}$
- 10) $\int (1 + 2p \cos 4x + p^2)^{\frac{1}{2}a} (p^2 + 2pq \cos 4x + q^2)^{\frac{1}{2}c} \cos \left\{ a \operatorname{Arccos} \left(\frac{1 + p \cos 4x}{\sqrt{1 + 2p \cos 4x + p^2}} \right) \right\} \cdot \cos \left\{ c \operatorname{Arccos} \left(\frac{p + q \cos 4x}{\sqrt{p^2 + 2pq \cos 4x + q^2}} \right) \right\} \cdot \operatorname{Tgx} \frac{dx}{x} = \frac{\pi}{2} p^c \left\{ 2 + \sum_1^{\infty} \binom{a}{n} \binom{c}{n} q^n \right\} \text{ (VIII, 416).}$
- 11) $\int \frac{(p^2 + 2pq \cos 2x + q^2)^{\frac{1}{2}c}}{1 - 2p^c \cos 2x + p^{2c}} \sin \left\{ a \operatorname{Arccos} \left(\frac{p + q \cos 2x}{\sqrt{p^2 + 2pq \cos 2x + q^2}} \right) \right\} \cdot \sin 2bx \cdot \sin x \frac{dx}{x} = \frac{\pi}{2} p^{a-c} \sum_1^{\infty} \binom{a}{nc} q^{nc} \text{ (VIII, 416).}$
- 12) $\int \frac{(p^2 + 2pq \cos 2x + q^2)^{\frac{1}{2}c}}{1 - 2p^c \cos 2x + p^{2c}} \sin \left\{ a \operatorname{Arccos} \left(\frac{p + q \cos 2x}{\sqrt{p^2 + 2pq \cos 2x + q^2}} \right) \right\} \cdot \sin 2bx \cdot \operatorname{Tgx} \frac{dx}{x} = \frac{\pi}{2} p^{a-c} \sum_1^{\infty} \binom{a}{nc} q^{nc} \text{ (VIII, 416).}$
- 13) $\int \frac{(p^2 + 2pq \cos 4x + q^2)^{\frac{1}{2}c}}{1 - 2p^c \cos 4x + p^{2c}} \sin \left\{ a \operatorname{Arccos} \left(\frac{p + q \cos 4x}{\sqrt{p^2 + 2pq \cos 4x + q^2}} \right) \right\} \cdot \sin 4bx \cdot \operatorname{Tgx} \frac{dx}{x} = \frac{\pi}{2} p^{a-c} \sum_1^{\infty} \binom{a}{nc} q^{nc} \text{ (VIII, 416).}$

F. Alg. rat. fract. à dén. monôme;

Circ. Dir. irrat. à fact. $(1 + 2p \cos x + p^2)^{\frac{1}{2}a}$; TABLE 451, suite. Lim. 0 et ∞ .

Circulaire Inverse.

$$14) \int \frac{(p^2 + 2pq \cos 2x + q^2)^{\frac{1}{2}c}}{1 - 2p^c \cos 2x + p^{2c}} \cos \left\{ a \operatorname{Arccos} \left(\frac{p + q \cos 2x}{\sqrt{p^2 + 2pq \cos 2x + q^2}} \right) \right\} \cdot \cos 2bx \cdot \sin x \frac{dx}{x} =$$

$$= \frac{\pi}{2} p^{a-c} \left\{ 2 + \sum_1^{\infty} \binom{a}{nc} q^{nc} \right\} \text{ (VIII, 416).}$$

$$15) \int \frac{(p^2 + 2pq \cos 2x + q^2)^{\frac{1}{2}c}}{1 - 2p^c \cos 2x + p^{2c}} \cos \left\{ a \operatorname{Arccos} \left(\frac{p + q \cos 2x}{\sqrt{p^2 + 2pq \cos 2x + q^2}} \right) \right\} \cdot \cos 2bx \cdot \operatorname{Tg} x \frac{dx}{x} =$$

$$= \frac{\pi}{2} p^{a-c} \left\{ 2 + \sum_1^{\infty} \binom{a}{nc} q^{nc} \right\} \text{ (VIII, 416).}$$

$$16) \int \frac{(p^2 + 2pq \cos 4x + q^2)^{\frac{1}{2}c}}{1 - 2p^c \cos 4x + p^{2c}} \cos \left\{ a \operatorname{Arccos} \left(\frac{p + q \cos 4x}{\sqrt{p^2 + 2pq \cos 4x + q^2}} \right) \right\} \cdot \cos 4bx \cdot \operatorname{Tg} x \frac{dx}{x} =$$

$$= \frac{\pi}{2} p^{a-c} \left\{ 2 + \sum_1^{\infty} \binom{a}{nc} q^{nc} \right\} \text{ (VIII, 416).}$$

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Circ. Dir. irrat. à fact. $(1 + 2r \cos x + r^2)^{\frac{1}{2}a}$; TABLE 452.

Lim. 0 et ∞ .

Circulaire Inverse.

$$1) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}a} \sin \left\{ a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} \left\{ (1 + r e^{-q})^a - 1 \right\}$$

(VIII, 501).

$$2) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}a} \cos \left\{ a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} (1 + r e^{-q})^a \text{ (VIII, 501).}$$

$$3) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}a} \sin \left\{ px + a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} e^{-pq} (1 + r e^{-q})^a$$

(VIII, 502).

$$4) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}a} \cos \left\{ px + a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} e^{-pq} (1 + r e^{-q})^a$$

(VIII, 502).

$$5) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}a} \sin \left\{ a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \cdot \sin px \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} (e^{pq} - e^{-pq})$$

$$(1 + r e^{-q})^a - \frac{\pi}{4q} e^{pq} \sum_0^a \binom{a}{n} r^n e^{-nq} + \frac{\pi}{4q} e^{-pq} \sum_0^a \binom{a}{n} r^n e^{nq} \text{ (VIII, 502).}$$

F. Alg. rat. fract. à dén. $q^2 + x$;

Circ. Dir. irrat. à fact. $(1 + 2r \cos x + r^2)^{\frac{1}{2}}$; TABLE 452, suite.

Lim. 0 et ∞ .

Circulaire Inverse.

$$\begin{aligned}
 6) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}} \sin \left\{ a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \cdot \cos p x \frac{x dx}{q^2 + x^2} &= \frac{\pi}{4} (e^{p q} + e^{-p q}) \\
 (1 + r e^{-q x})^a - \frac{\pi}{4} e^{p q} \sum_0^a \binom{a}{n} r^n e^{-n q x} - \frac{\pi}{4} e^{-p q} \sum_0^a \binom{a}{n} r^n e^{n q x} [p \text{ fractionn.}] &= \\
 = \frac{\pi}{4} (e^{p q} + e^{-p q}) (1 + r e^{-q x})^a - \frac{\pi}{4} e^{p q} \sum_0^{a-1} \binom{a}{n} r^n e^{-n q x} - \frac{\pi}{4} e^{-p q} \sum_0^a \binom{a}{n} r^n e^{n q x} [p \text{ entier}] & \\
 & \text{(VIII, 502).}
 \end{aligned}$$

$$\begin{aligned}
 7) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}} \cos \left\{ a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \cdot \sin p x \frac{x dx}{q^2 + x^2} &= \frac{\pi}{4} (e^{-p q} - e^{p q}) \\
 (1 + r e^{-q x})^a + \frac{\pi}{4} e^{p q} \sum_0^a \binom{a}{n} r^n e^{-n q x} + \frac{\pi}{4} e^{-p q} \sum_0^a \binom{a}{n} r^n e^{n q x} [p \text{ fractionn.}] &= \\
 = \frac{\pi}{4} (e^{-p q} - e^{p q}) (1 + r e^{-q x})^a + \frac{\pi}{4} e^{p q} \sum_0^{a-1} \binom{a}{n} r^n e^{-n q x} + \frac{\pi}{4} e^{-p q} \sum_0^a \binom{a}{n} r^n e^{n q x} [p \text{ entier}] & \\
 & \text{(VIII, 501).}
 \end{aligned}$$

$$\begin{aligned}
 8) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}} \cos \left\{ a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \cdot \cos p x \frac{dx}{q^2 + x^2} &= \frac{\pi}{4 q} (e^{p q} + e^{-p q}) \\
 (1 + r e^{-q x})^a - \frac{\pi}{4 q} e^{p q} \sum_0^a \binom{a}{n} r^n e^{-n q x} + \frac{\pi}{4 q} e^{-p q} \sum_0^a \binom{a}{n} r^n e^{n q x} & \text{(VIII, 501).}
 \end{aligned}$$

Dans 5) à 8) on a $d = \mathcal{E} \frac{p}{q}$.

$$\begin{aligned}
 9) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}} \sin \left\{ a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \cdot \sin^{2b} x \frac{x dx}{q^2 + x^2} &= \frac{(-1)^b \pi}{2^{2b+1}} (e^q - e^{-q})^{2b} \\
 \{ (1 + r e^{-q x})^a - 1 \} [s > 2b], &= \frac{(-1)^b \pi}{2^{2b+1}} [(e^q - e^{-q})^{2b} \{ (1 + r e^{-q x})^a - 1 \} - a r] [s = 2b] \\
 & \text{(V, 104).}
 \end{aligned}$$

$$\begin{aligned}
 10) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}} \cos \left\{ a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \cdot \sin^{2b+1} x \frac{x dx}{q^2 + x^2} &= \frac{(-1)^{b-1} \pi}{2^{2b+1}} [e^{-(2b+1)q} \\
 \{ (1 - e^{(2b+1)q}) (1 - e^{-2q})^{2b+1} - 2 \sum_0^b (-1)^n \binom{2b+1}{n} e^{2nq} \} &+ (e^q - e^{-q})^{2b+1} \\
 \{ (1 + r e^{-q x})^a - 1 \}] [s > 2b+1], &= \frac{(-1)^{b-1} \pi}{2^{2b+1}} [e^{-(2b+1)q} \{ (1 - e^{(2b+1)q}) \\
 (1 - e^{-2q})^{2b+1} - 2 \sum_0^b (-1)^n \binom{2b+1}{n} e^{2nq} \} - a r &+ (e^q - e^{-q})^{2b+1} \\
 \{ (1 + r e^{-q x})^a - 1 \}] [s = 2b+1] & \text{(V, 104).}
 \end{aligned}$$

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Circ. Dir. irrat. à fact. $(1 + 2r \cos x + r^2)^{\frac{1}{2}}$; TABLE 452, suite.

Lim. 0 et ∞ .

Circulaire Inverse.

$$11) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}} \cos \left\{ a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \cdot \cos^{2b} x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{2b+1} q} \left[\binom{2b}{b} + \right. \\ \left. + 2 \sum_1^b \binom{2b}{n+b} e^{-2nq} + (e^q + e^{-q})^{2b} \{ (1 + r e^{-q^2})^a - 1 \} \right] [s \geq 2b] \text{ (V, 104).}$$

$$12) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}} \cos \left\{ a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \cdot \cos^{2b+1} x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{2b+2} q} \\ \left[2 \sum_0^b \binom{2b+1}{n+b+1} e^{-(2n+2)q} + (e^q + e^{-q})^{2b+1} \{ (1 + r e^{-q^2})^a - 1 \} \right] [s \geq 2b+1] \text{ (V, 104).}$$

$$13) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}} \sin \left\{ a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \cdot \sin p x \cdot \sin^{2b+1} x \frac{x dx}{q^2 + x^2} = \\ = \frac{(-1)^{b-1} \pi}{2^{2b+2}} (e^q - e^{-q})^{2b+1} (e^{pq} - e^{-pq}) \{ (1 + r e^{-q^2})^a - 1 \} [p < s - 2b - 1], = \\ = \frac{(-1)^{b-1} \pi}{2^{2b+2}} [(e^q - e^{-q})^{2b+1} (e^{pq} - e^{-pq}) \{ (1 + r e^{-q^2})^a - 1 \} - a r] [p = s - 2b - 1] \\ \text{(V, 107).}$$

$$14) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}} \sin \left\{ a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \cdot \sin p x \cdot \cos^{2b} x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{2b+1} q} (e^q + e^{-q})^b \\ (e^{pq} - e^{-pq}) \{ (1 + r e^{-q^2})^a - 1 \} [p \leq s - b] \text{ (V, 105).}$$

$$15) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}} \sin \left\{ a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \cdot \cos p x \cdot \sin^{2b} x \frac{x dx}{q^2 + x^2} = \\ = \frac{(-1)^b \pi}{2^{2b+2}} (e^q - e^{-q})^{2b} (e^{pq} + e^{-pq}) \{ (1 + r e^{-q^2})^a - 1 \} [p < s - 2b], = \\ = \frac{(-1)^b \pi}{2^{2b+2}} [(e^q - e^{-q})^{2b} (e^{pq} + e^{-pq}) \{ (1 + r e^{-q^2})^a - 1 \} - a r] [p = s - 2b] \text{ (V, 106).}$$

$$16) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}} \cos \left\{ a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \cdot \sin p x \cdot \sin^{2b} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^b \pi}{2^{2b+2}} \\ (e^q - e^{-q})^{2b} \{ (e^{pq} + e^{-pq}) - (e^{pq} - e^{-pq}) (1 + r e^{-q^2})^a \} [2p > 4b < s], = \frac{(-1)^b \pi}{2^{2b+2}} \\ \left[(e^q - e^{-q})^{2b} \{ (e^{pq} + e^{-pq}) - (e^{pq} - e^{-pq}) (1 + r e^{-q^2})^a \} - 2e^{(2b-p)q} \sum_0^{s-1} (-1)^n \binom{2b}{n} \right. \\ \left. e^{-2nq} - 2e^{(p-2b)q} \sum_0^s (-1)^n \binom{2b}{n} e^{2nq} \right] [4b > 2p < s, p \text{ entier}], = \frac{(-1)^b \pi}{2^{2b+2}} [(e^q - e^{-q})^{2b} \\ \{ (e^{pq} + e^{-pq}) - (e^{pq} - e^{-pq}) (1 + r e^{-q^2})^a \} - 2e^{(2b-p)q} \sum_0^s (-1)^n \binom{2b}{n} e^{-2nq} - 2e^{(p-2b)q} \\ \sum_0^s (-1)^n \binom{2b}{n} e^{2nq}] [4b > 2p < s, p \text{ fractionn.}], = \frac{(-1)^b \pi}{2^{2b+2}} [(e^q - e^{-q})^{2b} \{ (e^{pq} + e^{-pq}) -$$

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Circ. Dir. irrat. à fact. $(1 + 2r \cos x + r^2)^{\frac{1}{2}}$; TABLE 452, suite.

Lim. 0 et ∞ .

Circulaire Inverse.

$$\begin{aligned}
 & -(e^{pq} - e^{-pq})(1 + re^{-qs})^a \} + ar] [2s - 4b = 2p > s > 4b], = \frac{(-1)^b \pi}{2^{2b+1}} \left[(e^q - e^{-q})^{2b} \right. \\
 & \left\{ (e^{pq} + e^{-pq}) - (e^{pq} - e^{-pq})(1 + re^{-qs})^a \right\} + ar - 2e^{(2b-p)q} \sum_{n=0}^{d-1} (-1)^n \binom{2b}{n} e^{-2nq} - \\
 & - 2e^{(p-2b)q} \sum_{n=0}^d (-1)^n \binom{2b}{n} e^{2nq} \left. \right] [2s - 4b = 2p < s < 4b, p \text{ entier}], = \frac{(-1)^b \pi}{2^{2b+1}} \\
 & \left[(e^q - e^{-q})^{2b} \left\{ (e^{pq} + e^{-pq}) - (e^{pq} - e^{-pq})(1 + re^{-qs})^a \right\} + ar - 2e^{(2b-p)q} \sum_{n=0}^d (-1)^n \right. \\
 & \left. \binom{2b}{n} e^{-2nq} - 2e^{(p-2b)q} \sum_{n=0}^d (-1)^n \binom{2b}{n} e^{2nq} \right] [2s - 4b = 2p < s < 4b, p \text{ fractionn.}] \\
 & \left[d = \mathcal{L} \left(b - \frac{1}{2} p \right) \right] \text{ (V, 105, 106).}
 \end{aligned}$$

$$\begin{aligned}
 17) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}} \cos \left\{ a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \cdot \cos p x \cdot \sin^{2b+1} x \frac{x dx}{q^2 + x^2} &= \frac{(-1)^b \pi}{2^{2b+1}} \\
 (e^q - e^{-q})^{2b+1} \left\{ (e^{pq} - e^{-pq}) - (e^{pq} + e^{-pq})(1 + re^{-qs})^a \right\} [2p < 4b + 2 < s], &= \frac{(-1)^b \pi}{2^{2b+1}} \\
 \left[(e^q - e^{-q})^{2b+1} \left\{ (e^{pq} - e^{-pq}) - (e^{pq} + e^{-pq})(1 + re^{-qs})^a \right\} + 2e^{(2b+1-p)q} \sum_{n=0}^{d-1} (-1)^n \right. \\
 \left. \binom{2b+1}{n} e^{-2nq} + 2e^{(p-2b-1)q} \sum_{n=0}^d (-1)^n \binom{2b+1}{n} e^{2nq} \right] [4b + 2 > p < s, p \text{ entier}], &= \\
 = \frac{(-1)^b \pi}{2^{2b+1}} \left[(e^q - e^{-q})^{2b+1} \left\{ (e^{pq} - e^{-pq}) - (e^{pq} + e^{-pq})(1 + re^{-qs})^a \right\} + 2e^{(2b+1-p)q} \right. \\
 \left. \sum_{n=0}^d (-1)^n \binom{2b+1}{n} e^{-2nq} + 2e^{(p-2b-1)q} \sum_{n=0}^d (-1)^n \binom{2b+1}{n} e^{2nq} \right] [4b + 2 > p < s, p \text{ fract.}], &= \\
 = \frac{(-1)^b \pi}{2^{2b+1}} [(e^q - e^{-q})^{2b+1} \left\{ (e^{pq} - e^{-pq}) - (e^{pq} + e^{-pq})(1 + re^{-qs})^a \right\} + ar] [2s - 4b - 2 = \\
 = 2p > s > 4b + 2], &= \frac{(-1)^b \pi}{2^{2b+1}} \left[(e^q - e^{-q})^{2b+1} \left\{ (e^{pq} - e^{-pq}) - (e^{pq} + e^{-pq})(1 + re^{-qs})^a \right\} + \right. \\
 + ar + 2e^{(2b+1-p)q} \sum_{n=0}^{d-1} (-1)^n \binom{2b+1}{n} e^{-2nq} + 2e^{(p-2b-1)q} \sum_{n=0}^d (-1)^n \binom{2b+1}{n} e^{2nq} \left. \right] \\
 [2s - 4b - 2 = 2p < s < 4b + 2, p \text{ entier}], &= \frac{(-1)^b \pi}{2^{2b+1}} \left[(e^q - e^{-q})^{2b+1} \left\{ (e^{pq} - e^{-pq}) - \right. \right. \\
 - (e^{pq} + e^{-pq})(1 + re^{-qs})^a \left. \right\} + ar + 2e^{(2b+1-p)q} \sum_{n=0}^d (-1)^n \binom{2b+1}{n} e^{-2nq} + 2e^{(p-2b-1)q} \sum_{n=0}^d (-1)^n \binom{2b+1}{n} e^{2nq} \left. \right] \\
 [2s - 4b - 2 = 2p < s < 4b + 2, p \text{ fract.}] \left[d = \mathcal{L} \frac{1}{2} (2b + 1 - p) \right] &
 \end{aligned}$$

(V, 106, 107).

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Circ. Dir. irrat. à fact. $(1 + 2r \cos x + r^2)^{\frac{1}{2}a}$; TABLE 452, suite. Lim. 0 et ∞ .

Circulaire Inverse.

$$18) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}a} \cos \left\{ a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \cdot \cos p x \cdot \cos^b x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{b+1} q} (e^q + e^{-q})^b \\ \{ (e^{-pq} - e^{pq}) + (e^{pq} + e^{-pq})(1 + r e^{-q^2})^a \} [2p \geq 2b \leq s], = \frac{\pi}{2^{b+1} q} \left[(e^q + e^{-q})^b \right. \\ \left. \{ (e^{-pq} - e^{pq}) + (e^{pq} + e^{-pq})(1 + r e^{-q^2})^a \} - 2e^{(b-p)q} \sum_0^d \binom{b}{n} e^{-2nq} + 2e^{(p-b)q} \right. \\ \left. \sum_0^d \binom{b}{n} e^{2nq} \right] [2b > 2p \leq s] \left[d = \mathcal{C} \frac{1}{2} (b-p) \right] \text{ (V, 105).}$$

F. Alg. rat. fract. à dén. $q^2 - x^2$;

Circ. Dir. irrat. à fact. $(1 + 2r \cos x + r^2)^{\frac{1}{2}a}$; TABLE 453. Lim. 0 et ∞ .

Circulaire Inverse.

$$1) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}a} \sin \left\{ a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \left[1 - (1 + 2r \cos q + r^2)^{\frac{1}{2}a} \right. \\ \left. \cos \left\{ a \operatorname{Arctg} \left(\frac{r \sin q}{1 + r \cos q} \right) \right\} \right] \text{ (VIII, 512).}$$

$$2) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}a} \cos \left\{ a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} (1 + 2r \cos q + r^2)^{\frac{1}{2}a} \\ \sin \left\{ a \operatorname{Arctg} \left(\frac{r \sin q}{1 + r \cos q} \right) \right\} \text{ (VIII, 511).}$$

$$3) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}a} \sin \left\{ p x + a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} (1 + 2r \cos q + r^2)^{\frac{1}{2}a} \\ \cos \left\{ p q + a \operatorname{Arctg} \left(\frac{r \sin q}{1 + r \cos q} \right) \right\} \left[\frac{p}{s} \text{ fractionn.} \right], = -\frac{\pi}{2} (1 + 2r \cos q + r^2)^{\frac{1}{2}a} \\ \cos \left\{ p q + a \operatorname{Arctg} \left(\frac{r \sin q}{1 + r \cos q} \right) \right\} + \frac{\pi}{2} \binom{a}{d} r^d \left[\frac{p}{s} \text{ entier} = d \right] \text{ (VIII, 513).}$$

$$4) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}a} \cos \left\{ p x + a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} (1 + 2r \cos q + r^2)^{\frac{1}{2}a} \\ \sin \left\{ p q + a \operatorname{Arctg} \left(\frac{r \sin q}{1 + r \cos q} \right) \right\} \text{ (VIII, 512).}$$

$$5) \int (1 + 2r \cos x + r^2)^{\frac{1}{2}a} \sin \left\{ a \operatorname{Arctg} \left(\frac{r \sin x}{1 + r \cos x} \right) \right\} \cdot \sin p x \frac{dx}{q^2 - x^2} = -\frac{\pi}{2q} (1 + 2r \cos q + r^2)^{\frac{1}{2}a} \\ \cos \left\{ a \operatorname{Arctg} \left(\frac{r \sin q}{1 + r \cos q} \right) \right\} \cdot \sin p q + \frac{\pi}{2q} \sum_0^d \binom{a}{n} r^n \sin \{ (p - n) q \} \\ \text{ (VIII, 512).}$$

F. Alg. rat. fract. à dén. $q^2 - x^2$;

Circ. Dir. irrat. à fact. $(1 + 2r \cos s x + r^2)^{\frac{1}{2}a}$; TABLE 453 suite. Lim. 0 et ∞ .
Circulaire Inverse.

$$\begin{aligned} 6) \int (1 + 2r \cos s x + r^2)^{\frac{1}{2}a} \sin \left\{ a \operatorname{Arctg} \left(\frac{r \sin s x}{1 + r \cos s x} \right) \right\} \cdot \cos p x \frac{x dx}{q^2 - x^2} &= -\frac{\pi}{2} (1 - 2r \cos q s + r^2)^{\frac{1}{2}a} \\ &\cos \left\{ a \operatorname{Arctg} \left(\frac{r \sin q s}{1 + r \cos q s} \right) \right\} \cdot \cos p q + \frac{\pi}{2} \sum_0^d \binom{a}{n} r^n \cos \{(p - ns)q\} [p \text{ fractionn.}] = \\ &= -\frac{\pi}{2} (1 + 2r \cos q s + r^2)^{\frac{1}{2}a} \cos \left\{ a \operatorname{Arctg} \left(\frac{r \sin q s}{1 + r \cos q s} \right) \right\} \cdot \cos p q + \frac{\pi}{4} \binom{a}{d} r^d + \frac{\pi}{2} \sum_0^d \binom{a}{n} r^n \\ &\cos \{(p - ns)q\} [p \text{ entier}] \text{ (VIII, 512)}. \end{aligned}$$

$$\begin{aligned} 7) \int (1 + 2r \cos s x + r^2)^{\frac{1}{2}a} \cos \left\{ a \operatorname{Arctg} \left(\frac{r \sin s x}{1 + r \cos s x} \right) \right\} \cdot \sin p x \frac{x dx}{q^2 - x^2} &= \frac{\pi}{2} (1 + 2r \cos q s + r^2)^{\frac{1}{2}a} \\ &\sin \left\{ a \operatorname{Arctg} \left(\frac{r \sin q s}{1 + r \cos q s} \right) \right\} \cdot \sin p q - \frac{\pi}{2} \sum_0^d \binom{a}{n} r^n \cos \{(p - ns)q\} [p \text{ fractionn.}] = \\ &= \frac{\pi}{2} (1 + 2r \cos q s + r^2)^{\frac{1}{2}a} \sin \left\{ a \operatorname{Arctg} \left(\frac{r \sin q s}{1 + r \cos q s} \right) \right\} \cdot \sin p q + \frac{\pi}{4} \binom{a}{d} r^d - \frac{\pi}{2} \sum_0^d \binom{a}{n} r^n \\ &\cos \{(p - ns)q\} [p \text{ entier}] \text{ (VIII, 512)}. \end{aligned}$$

$$\begin{aligned} 8) \int (1 + 2r \cos s x + r^2)^{\frac{1}{2}a} \cos \left\{ a \operatorname{Arctg} \left(\frac{r \sin s x}{1 + r \cos s x} \right) \right\} \cdot \cos p x \frac{dx}{q^2 - x^2} &= \frac{\pi}{2q} (1 + 2r \cos q s + r^2)^{\frac{1}{2}a} \\ &\sin \left\{ a \operatorname{Arctg} \left(\frac{r \sin q s}{1 + r \cos q s} \right) \right\} \cdot \cos p q + \frac{\pi}{2q} \sum_0^d \binom{a}{n} r^n \sin \{(p - ns)q\} \text{ (VIII, 511)}. \end{aligned}$$

Dans 5) à 8) on a $d = \mathcal{L} \frac{p}{s}$.

F. Alg. irrat. fract. à dén. $(q^2 + x^2)^{\frac{1}{2}a}$;

Circulaire Directe;

TABLE 454.

Lim. 0 et ∞ .

Circulaire Inverse.

$$1) \int \sin \left(r \operatorname{Arctg} \frac{x}{q} \right) \cdot \sin p x \frac{dx}{(q^2 + x^2)^{\frac{1}{2}r}} = \frac{\pi e^{-p q} p^{r-1}}{2 \Gamma(r)} \text{ (VIII, 277).}$$

$$2) \int \cos \left(a \operatorname{Arctg} \frac{x}{q} \right) \cdot \sin p x \frac{x dx}{(p^2 + x^2)^{\frac{1}{2}a}} = \frac{(-1)^{a-1}}{1^{a-1/1}} \frac{\pi}{2} \frac{d^{a-1}}{dq^{a-1}} \cdot q e^{-p q} \text{ (VIII, 278).}$$

$$3) \int \cos \left(r \operatorname{Arctg} \frac{x}{q} \right) \cdot \cos p x \frac{dx}{(q^2 + x^2)^{\frac{1}{2}r}} = \frac{\pi e^{-p q} p^{r-1}}{2 \Gamma(r)} \text{ (VIII, 277).}$$

$$4) \int \cos \left(p x + r \operatorname{Arctg} \frac{x}{q} \right) \frac{dx}{(q^2 + x^2)^{\frac{1}{2}r}} = 0 \text{ V. T. 44, N. 3.}$$

$$5) \int \cos \left(p x - r \operatorname{Arctg} \frac{x}{q} \right) \frac{dx}{(q^2 + x^2)^{\frac{1}{2}r}} = \frac{\pi e^{-p q} p^{r-1}}{\Gamma(r)} \text{ V. T. 44, N. 2.}$$

$$6) \int \cos\left(px + r \operatorname{Arctg} \frac{x}{q}\right) \frac{dx}{(q^2 + x^2)^{\frac{1}{2}r-1}} = \frac{\pi e^{-p^2}}{2^{r+1}} \text{ V. T. 44, N. 4.}$$

$$7) \int \cos\left(r \operatorname{Arctg} \frac{x}{q}\right) \frac{dx}{(q^2 + x^2)^{\frac{1}{2}r}} = 0 \text{ (VIII, 573).}$$

$$8) \int \cos\left\{(r-a-1) \operatorname{Arctg} \frac{x}{q}\right\} \frac{dx}{(q^2 + x^2)^{\frac{1}{2}(r+a+1)}} = \frac{\pi}{2^{r+a}} \frac{r^{a/2}}{1^{a/2}} \frac{1}{q^{r+a}} \text{ (VIII, 573).}$$

$$9) \int \sin\left(r \operatorname{Arctg} \frac{x}{q}\right) \cdot \sin\left(a \operatorname{Arctg} \frac{x}{q}\right) \frac{dx}{(q^2 + x^2)^{\frac{1}{2}(a+r)}} = \frac{\pi}{2^{r+a}} \frac{r^{a-1/2}}{1^{a-1/2}} \frac{1}{q^{r+a-1}} \text{ (VIII, 572).}$$

$$10) \int \sin\left(r \operatorname{Arctg} \frac{x}{q}\right) \cdot \cos\left(a \operatorname{Arctg} \frac{x}{q}\right) \frac{x dx}{(q^2 + x^2)^{\frac{1}{2}(a+r)}} = \frac{\pi}{2^{r+a}} \frac{r^{a-1/2}}{1^{a-1/2}} \frac{1}{q^{r+a-1}} \text{ (VIII, 574).}$$

$$11) \int \cos\left(r \operatorname{Arctg} \frac{x}{q}\right) \cdot \cos\left(a \operatorname{Arctg} \frac{x}{q}\right) \frac{dx}{(q^2 + x^2)^{\frac{1}{2}(a+r)}} = \frac{\pi}{2^{r+a}} \frac{r^{a-1/2}}{1^{a-1/2}} \frac{1}{q^{r+a-1}} \text{ (VIII, 572).}$$

$$12) \int \sin srx \cdot \operatorname{Ty}rx \cdot \cos\left\{srx + c \operatorname{Arctg} \frac{x}{q}\right\} \frac{dx}{(q^2 + x^2)^{\frac{1}{2}c}} = 0 \text{ (H, 87).}$$

$$13) \int \sin srx \cdot \operatorname{Co}rx \cdot \cos\left\{srx + c \operatorname{Arctg} \frac{x}{q}\right\} \frac{dx}{(q^2 + x^2)^{\frac{1}{2}c}} = 0 \text{ (H, 84).}$$

$$14) \int \sin srx \cdot \operatorname{Co}secrx \cdot \cos\left\{srx + c \operatorname{Arctg} \frac{x}{q}\right\} \frac{dx}{(q^2 + x^2)^{\frac{1}{2}c}} = 0 \text{ (H, 89).}$$

$$15) \int \cos^s rx \cdot \cos^{s_1} r_1 x \dots \cos\left\{(s+s_1+\dots)x + c \operatorname{Arctg} \frac{x}{q}\right\} \frac{dx}{(q^2 + x^2)^{\frac{1}{2}c}} = 0 \text{ (H, 45).}$$

$$16) \int \sin^s rx \cdot \sin^{s_1} r_1 x \dots \cos\left\{(s+s_1+\dots)\frac{1}{2}\pi - (s+s_1+\dots)x - c \operatorname{Arctg} \frac{x}{q}\right\} \frac{dx}{(q^2 + x^2)^{\frac{1}{2}c}} = 0 \text{ (H, 50).}$$

$$17) \int \cos^s px \dots \sin^s rx \dots \cos\left\{(s+\dots)\frac{1}{2}\pi - (sp+\dots+sr+\dots)x - c \operatorname{Arctg} \frac{x}{q}\right\} \frac{dx}{(q^2 + x^2)^{\frac{1}{2}c}} = 0 \text{ (H, 55).}$$

$$18) \int (1 - 2e^r \cos x + e^{2r})^{\frac{1}{2}c} \cos\left\{px + c \operatorname{Arctg} \left(\frac{\sin x}{\cos x - e^{-r}}\right) + a \operatorname{Arctg} \frac{x}{q}\right\} \frac{dx}{(q^2 + x^2)^{\frac{1}{2}a}} = 0 \text{ (IV, 556).}$$

F. Alg. irrat. fract. à dén. $x^r(q^2+x^2)^{\frac{1}{2}a}$;

Circulaire Directe;

TABLE 455.

Lim. 0 et ∞ .

Circulaire Inverse.

$$1) \int \sin\left(p \operatorname{Arctg} \frac{x}{q}\right) \frac{dx}{x(q^2+x^2)^{\frac{1}{2}p}} = \frac{\pi}{2} q^{-p} \quad (\text{VIII, 449}).$$

$$2) \int \sin\left\{(p-a) \operatorname{Arctg} \frac{x}{q}\right\} \frac{dx}{x(q^2+x^2)^{\frac{1}{2}(p+a)}} = \frac{\pi}{2 \cdot 1^{a-1/1}} q^{p+a} \left\{ p^{a-1/1} - \frac{1}{2^{p+a-1}} \sum_0^{a-1} \binom{a-1}{n} 2^{n/2} p^{a-n-1/1} \right\} \quad (\text{VIII, 574}).$$

$$3) \int \sin\left(p \operatorname{Arctg} \frac{x}{q}\right) \frac{dx}{x^r(q^2+x^2)^{\frac{1}{2}p}} = \frac{\pi}{2 q^{p+r-1}} \operatorname{Cosec} \frac{1}{2} r \pi \frac{\Gamma(p+r-1)}{\Gamma(p)\Gamma(r)} [2 > r > 0] \quad (\text{VIII, 449}).$$

$$4) \int \cos\left(p \operatorname{Arctg} \frac{x}{q}\right) \frac{dx}{x^r(q^2+x^2)^{\frac{1}{2}p}} = \frac{\pi}{2 q^{p+r-1}} \operatorname{Sec} \frac{1}{2} r \pi \frac{\Gamma(p+r-1)}{\Gamma(p)\Gamma(r)} [1 > r > -1] \quad (\text{VIII, 448}).$$

$$5) \int \sin(cx + p \operatorname{Arctg} x) \frac{dx}{x(1+x^2)^{\frac{1}{2}p}} = \frac{\pi}{2} \quad \text{V. T. 51, N. 15.}$$

$$6) \int \{ \sin(p \operatorname{Arctg} x) + \sin(ax - p \operatorname{Arctg} x) \} \frac{dx}{x(1+x^2)^{\frac{1}{2}p}} = \frac{\pi}{2} \quad (\text{IV, 557}).$$

$$7) \int \cos\left\{x - \frac{\cos(p \operatorname{Arctg} x)}{(1+x^2)^{\frac{1}{2}p}}\right\} \frac{dx}{x} = Z'(p) \quad (\text{VIII, 682}).$$

$$8) \int \sin\left(a \operatorname{Arctg} \frac{x}{q}\right) \cdot \cos px \frac{dx}{x(q^2+x^2)^{\frac{1}{2}a}} = \frac{(-1)^{a-1}}{1^{a-1/1}} \frac{\pi}{2} \frac{d^{a-1}}{dq^{a-1}} \cdot \frac{e^{-p^2 q}}{q} \quad (\text{VIII, 277}).$$

$$9) \int \sin\left(p \operatorname{Arctg} \frac{x}{q}\right) \cdot \cos\left(a \operatorname{Arctg} \frac{x}{q}\right) \frac{dx}{x(q^2+x^2)^{\frac{1}{2}(a+p)}} = \frac{\pi}{1^{a-1/1}} \frac{1}{2 q^{p+a}} \left\{ p^{a-1/1} - \frac{1}{2^{p+a-1}} \sum_0^{a-1} \binom{a-1}{n} 2^{n/2} p^{a-n-1/1} \right\} \quad (\text{VIII, 574}).$$

$$10) \int \cos\left(p \operatorname{Arctg} \frac{x}{q}\right) \cdot \sin\left(a \operatorname{Arctg} \frac{x}{q}\right) \frac{dx}{x(q^2+x^2)^{\frac{1}{2}(a+p)}} = \frac{\pi}{2^{p+a} 1^{a-1/1}} \frac{1}{q^{p+a}} \sum_0^{a-1} \binom{a-1}{n} 2^{n/2} p^{a-n-1/1} \quad (\text{VIII, 574}).$$

F. Alg. irrat. fract. à dén. prod. de bin.;

Circulaire Directe;

TABLE 456.

Lim. 0 et ∞ .

Circulaire Inverse.

$$1) \int \sin\left(p \operatorname{Arctg} \frac{x}{q}\right) \frac{x dx}{(s^2+x^2)(q^2+x^2)^{\frac{1}{2}p}} = \frac{\pi}{2} \frac{1}{(q+s)^p} \quad (\text{VIII, 449}).$$

$$2) \int \cos\left(p \operatorname{Arctg} \frac{x}{q}\right) \frac{dx}{(s^2+x^2)(q^2+x^2)^{\frac{1}{2}p}} = \frac{\pi}{2s} \frac{1}{(q+s)^p} \quad (\text{VIII, 449}).$$

$$3) \int \sin \left(p \operatorname{Arctg} \frac{x}{q} \right) \frac{x dx}{(r^2 + x^2)^{a+1} (q^2 + x^2)^{\frac{1}{2}p}} = \frac{\pi}{2} \frac{(2r)^a (q+r)^{p+a}}{(2r)^a (q+r)^{p+a}} \frac{p^{a/1}}{1^{a/1}} \sum_0^\infty \frac{(a+n-1)^{2n-1}}{2^{n/2} (p+a-1)^{n/2-1}} \left(\frac{q+r}{r} \right)^n \quad (\text{VIII, 450}).$$

$$4) \int \cos \left(p \operatorname{Arctg} \frac{x}{q} \right) \frac{dx}{(r^2 + x^2)^{a+1} (q^2 + x^2)^{\frac{1}{2}p}} = \frac{\pi}{(2r)^{a+1} (q+r)^{p+a}} \frac{p^{a/1}}{1^{a/1}} \sum_0^\infty \frac{(a+n)^{2n-1}}{2^{n/2} (p+a-1)^{n/2-1}} \left(\frac{q+r}{r} \right)^n \quad (\text{VIII, 450}).$$

$$5) \int \sin \left(p \operatorname{Arctg} \frac{x}{q} \right) \frac{dx}{x(r^2 + x^2)(q^2 + x^2)^{\frac{1}{2}p}} = \frac{\pi}{2r^2} \left\{ \frac{1}{q^p} - \frac{1}{(1+q)^p} \right\} \quad (\text{VIII, 450}).$$

$$6) \int \sin \left(p \operatorname{Arctg} \frac{x}{q} + a \operatorname{Arctg} \frac{x}{s} \right) \frac{dx}{x(s^2 + x^2)^{\frac{1}{2}a} (q^2 + x^2)^{\frac{1}{2}p}} = \frac{\pi}{2q^p s^a} \frac{p^{a-1/1}}{1^{a-1/1}} \quad (\text{VIII, 574}).$$

$$7) \int \sin \left(p \operatorname{Arctg} \frac{x}{q} - a \operatorname{Arctg} \frac{x}{s} \right) \frac{dx}{x(s^2 + x^2)^{\frac{1}{2}a} (q^2 + x^2)^{\frac{1}{2}p}} = \frac{\pi}{s \cdot 1^{a-1/1}} \left\{ \frac{p^{a-1/1}}{2 s^{a-1} q^p} - \frac{1}{(q+s)^{a+p-1}} \sum_0^{a-1} \binom{a-1}{n} 1^{n/1} p^{a-n-1/1} \left(\frac{q+s}{s} \right)^n \right\} \quad (\text{VIII, 574}).$$

$$8) \int \cos \left(p \operatorname{Arctg} \frac{x}{q} + a \operatorname{Arctg} \frac{x}{s} \right) \frac{dx}{(s^2 + x^2)^{\frac{1}{2}a} (q^2 + x^2)^{\frac{1}{2}p}} = 0 \quad (\text{VIII, 573}).$$

$$9) \int \cos \left(p \operatorname{Arctg} \frac{x}{q} - a \operatorname{Arctg} \frac{x}{s} \right) \frac{dx}{(s^2 + x^2)^{\frac{1}{2}a} (q^2 + x^2)^{\frac{1}{2}p}} = \frac{p^{a-1/1}}{1^{a-1/1}} \frac{\pi}{(q+s)^{p+a-1}} \quad (\text{VIII, 573}).$$

$$10) \int \sin \left(p \operatorname{Arctg} \frac{x}{q} \right) \cdot \sin \left(a \operatorname{Arctg} \frac{x}{s} \right) \frac{dx}{(s^2 + x^2)^{\frac{1}{2}a} (q^2 + x^2)^{\frac{1}{2}p}} = \frac{\pi}{2} \frac{p^{a-1/1}}{1^{a-1/1}} \frac{1}{(q+s)^{p+a-1}} \quad (\text{VIII, 572}).$$

$$11) \int \sin \left(p \operatorname{Arctg} \frac{x}{q} \right) \cdot \cos \left(a \operatorname{Arctg} \frac{x}{s} \right) \frac{x dx}{(s^2 + x^2)^{\frac{1}{2}a} (q^2 + x^2)^{\frac{1}{2}p}} = \frac{\pi}{2} \frac{p^{a-1/1}}{1^{a-1/1}} \frac{(a-1)q + (p-1)s}{p+a-2} \frac{1}{(q+s)^{p+a-1}} \quad (\text{VIII, 574}).$$

$$12) \int \sin \left(p \operatorname{Arctg} \frac{x}{q} \right) \cdot \cos \left(a \operatorname{Arctg} \frac{x}{s} \right) \frac{dx}{x(s^2 + x^2)^{\frac{1}{2}a} (q^2 + x^2)^{\frac{1}{2}p}} = \frac{\pi}{2s \cdot 1^{a-1/1}} \left\{ \frac{p^{a-1/1}}{s^{a-1} q^p} - \frac{1}{(q+s)^{p+a-1}} \sum_0^{a-1} \binom{a-1}{n} 1^{n/1} p^{a-n-1/1} \left(\frac{q+s}{s} \right)^n \right\} \quad (\text{VIII, 574}).$$

F. Alg. irrat. fract. à dén. prod. de bin.;

Circulaire Directe;

TABLE 456, suite.

Lim. 0 et ∞ .

Circulaire Inverse.

$$13) \int \cos \left(p \operatorname{Arctg} \frac{x}{q} \right) \cdot \sin \left(a \operatorname{Arctg} \frac{x}{s} \right) \frac{dx}{x(s^2 + x^2)^{\frac{1}{2}a} (q^2 + x^2)^{\frac{1}{2}p}} = \frac{\pi}{1^{a-1/2} 2 s (q+s)^{p+a-1}} \sum_0^{a-1} \binom{a-1}{n} 1^{n/2} p^{a-n-1/2} \left(\frac{q+s}{s} \right)^n \quad (\text{VIII, 578}).$$

$$14) \int \cos \left(p \operatorname{Arctg} \frac{x}{q} \right) \cdot \cos \left(a \operatorname{Arctg} \frac{x}{s} \right) \frac{dx}{(s^2 + x^2)^{\frac{1}{2}a} (q^2 + x^2)^{\frac{1}{2}p}} = \frac{\pi}{2} \frac{p^{a-1/2}}{1^{a-1/2}} \frac{1}{(q+s)^{p+a-1}} \quad (\text{VIII, 572}).$$

F. Algébrique;

Circulaire Directe;

TABLE 457.

Lim. 0 et $\frac{\pi}{2}$.

Circulaire Inverse.

$$1) \int \operatorname{Arctg}(p \sin x) \frac{x dx}{\sin x \cdot \operatorname{Tang} x} = \frac{\pi}{2} \left\{ l \frac{1+p}{p} + l \{p + \sqrt{1+p^2}\} - \operatorname{Arctg} p \right\} \quad \text{V. T. 207, N. 11 et T. 342, N. 1.}$$

$$2) \int \operatorname{Arctg}(p \cos x) \cdot \operatorname{Tg} x \frac{x dx}{\cos x} = \frac{\pi}{2} \left\{ p + l \frac{1+p}{p} - l \{p + \sqrt{1+p^2}\} \right\} \quad \text{V. T. 208, N. 20 et T. 342, N. 2.}$$

$$3) \int \operatorname{Arctg} \left\{ \frac{\cot \lambda}{\sqrt{1-p^2 \sin^2 x}} \right\} \cdot \frac{x \sin 2x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{\pi}{p^2} \left[E \{p, \operatorname{Arccot}[Tg \lambda \cdot \sqrt{1-p^2}] \} - \cot \lambda \cdot \left\{ \frac{1}{\sqrt{1-p^2 \sin^2 \lambda}} - 1 \right\} - \sqrt{1-p^2} \cdot \operatorname{Arccot}[Tg \lambda \cdot \sqrt{1-p^2}] - \cot \lambda \cdot l \frac{2 \sqrt{1-p^2 \sin^2 \lambda}}{1 + \sqrt{1-p^2 \sin^2 \lambda}} \right] \quad \text{V. T. 207, N. 2 et T. 341, N. 13.}$$

$$4) \int \operatorname{Arctg} \left\{ \frac{\cot \lambda}{\sqrt{1-p^2 \sin^2 x}} \right\} \cdot \frac{x \sin 2x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{\pi}{p^2} \left[\frac{1}{\sqrt{1-p^2}} \operatorname{Arccot}[Tg \lambda \cdot \sqrt{1-p^2}] - F \{p, \operatorname{Arccot}[Tg \lambda \cdot \sqrt{1-p^2}]\} + Tg \lambda \cdot l \frac{\{1 + \sqrt{1-p^2 \sin^2 \lambda}\} \sqrt{1-p^2}}{\{1 + \sqrt{1-p^2}\} \sqrt{1-p^2 \sin^2 \lambda}} \right] \quad \text{V. T. 208, N. 10 et T. 344, N. 14.}$$

$$5) \int \operatorname{Arctg} \{Tg \lambda \cdot \sqrt{1-p^2 \sin^2 x}\} \cdot \frac{x \sin 2x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{\pi}{p^2} \left[E(p, \lambda) - \cot \lambda \cdot \{1 - \sqrt{1-p^2 \sin^2 \lambda}\} - \sqrt{1-p^2} \cdot \operatorname{Arctg}[Tg \lambda \cdot \sqrt{1-p^2}] + \cot \lambda \cdot l \frac{2 \sqrt{1-p^2 \sin^2 \lambda}}{1 + \sqrt{1-p^2 \sin^2 \lambda}} \right]$$

V. T. 207, N. 2 et T. 341, N. 12.

F. Algébrique;

Circulaire Directe;

TABLE 457, suite.

Lim. 0 et $\frac{\pi}{2}$.

Circulaire Inverse.

$$6) \int \operatorname{Arctg} \{Tg \lambda \cdot \sqrt{1-p^2 \sin^2 x}\} \frac{x \sin 2x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{\pi}{p^2} \left[\frac{1}{\sqrt{1-p^2}} \operatorname{Arctg}[Tg \lambda \cdot \sqrt{1-p^2}] - \right. \\ \left. - F(p, \lambda) + Tg \lambda \cdot l \frac{\{1 + \sqrt{1-p^2}\} \sqrt{1-p^2 \sin^2 \lambda}}{\{1 + \sqrt{1-p^2 \sin^2 \lambda}\} \sqrt{1-p^2}} \right] \text{ V. T. 208, N. 10 et T. 344, N. 3.}$$

$$7) \int \operatorname{Arctg} (q Tg x) \frac{x dx}{\sin^2 x} = \frac{\pi}{2q} \left\{ l(1+q) + ql \frac{1+q}{q} \right\} \text{ V. T. 247, N. 8.}$$

F. Algébrique;

Circulaire Directe;

TABLE 458.

Lim. 0 et π

Circulaire Inverse; [$p^2 < 1, 0 < q < 1$].

$$1) \int \operatorname{Arctg} \left(\frac{p \sin x}{1-p \cos x} \right) \cdot \sin ax \cdot x^{2b} dx = \frac{(-1)^b \pi p^a}{2a^{2b+1}} 1^{2b+1} \sum_0^{2b} \frac{(-a l p)^n}{1^{n+1}} \text{ (IV, 553).}$$

$$2) \int \operatorname{Arctg} \left(\frac{p \sin x}{1-p \cos x} \right) \cdot \cos ax \cdot x^{2b-1} dx = \frac{(-1)^b \pi p^a}{2a^{2b}} 1^{2b-1} \sum_0^{2b-1} \frac{(-a l p)^n}{1^{n+1}} \text{ (IV, 553).}$$

$$3) \int \operatorname{Arctg} \left(\frac{2p \sin x}{1-p^2} \right) \cdot \sin 2ax \cdot x^{2b} dx = 0 \text{ V. T. 458, N. 1.}$$

$$4) \int \operatorname{Arctg} \left(\frac{2p \sin x}{1-p^2} \right) \cdot \sin \{(2a-1)x\} \cdot x^{2b} dx = \frac{(-1)^b \pi p^{2a-1}}{2^{2b}(2a-1)^{2b+1}} 1^{2b+1} \sum_0^{2b} \frac{\{-(2a-1)lp\}^n}{1^{n+1}} \\ \text{V. T. 458, N. 1.}$$

$$5) \int \operatorname{Arctg} \left(\frac{2p \sin x}{1-p^2} \right) \cdot \cos 2ax \cdot x^{2b-1} dx = 0 \text{ V. T. 458, N. 2.}$$

$$6) \int \operatorname{Arctg} \left(\frac{2p \sin x}{1-p^2} \right) \cdot \cos \{(2a-1)x\} \cdot x^{2b-1} dx = \frac{(-1)^{b-1} \pi p^{2a-1}}{2^{2b-1}(2a-1)^{2b}} 1^{2b-1} \sum_0^{2b-1} \frac{\{-(2a-1)lp\}^n}{1^{n+1}} \\ \text{V. T. 458, N. 2.}$$

$$7) \int \operatorname{Arctg} \left(\frac{2p \sin x}{1-p^2} \right) \cdot \sin \{(2a-1)x\} \cdot \sin x \cdot x^{2b-1} dx = 0 \text{ V. T. 458, N. 5.}$$

$$8) \int \operatorname{Arctg} \left(\frac{2p \sin x}{1-p^2} \right) \cdot \sin \{(2a-1)x\} \cdot \cos x \cdot x^{2b} dx = 0 \text{ V. T. 458, N. 3.}$$

$$9) \int \operatorname{Arctg} \left(\frac{2p \sin x}{1-p^2} \right) \cdot \cos \{(2a-1)x\} \cdot \sin x \cdot x^{2b} dx = 0 \text{ V. T. 458, N. 3.}$$

$$10) \int \operatorname{Arctg} \left(\frac{2p \sin x}{1-p^2} \right) \cdot \cos \{(2a-1)x\} \cdot \cos x \cdot x^{2b-1} dx = 0 \text{ V. T. 458, N. 5.}$$

F. Algébrique;

Circulaire Directe;

TABLE 458, suite.

Lim. 0 et π .

Circulaire Inverse; [$p^2 < 1, 0 < q < 1$].

$$11) \int \operatorname{Arctg} \left(\frac{q \sin 2x}{1 - q \cos 2x} \right) \cdot \sin 2ax \cdot x^{2b} dx = \frac{(-1)^b \pi q^a}{2^{2b} a^{2b+1}} 1^{2b+1} \sum_0^{2b} \frac{(-a/q)^n}{1^{n+1}} \text{ V. T. 458, N. 1.}$$

$$12) \int \operatorname{Arctg} \left(\frac{q \sin 2x}{1 - q \cos 2x} \right) \cdot \sin \{(2a-1)x\} \cdot x^{2b} dx = 0 \text{ V. T. 458, N. 1.}$$

$$13) \int \operatorname{Arctg} \left(\frac{q \sin 2x}{1 - q \cos 2x} \right) \cdot \cos 2ax \cdot x^{2b-1} dx = \frac{(-1)^b \pi q^a}{2^{2b-1} a^{2b}} 1^{2b-1} \sum_0^{2b-1} \frac{(-a/q)^n}{1^{n+1}} \text{ V. T. 458, N. 1.}$$

$$14) \int \operatorname{Arctg} \left(\frac{q \sin 2x}{1 - q \cos 2x} \right) \cdot \cos \{(2a-1)x\} \cdot x^{2b-1} dx = 0 \text{ V. T. 458, N. 2.}$$

$$15) \int \operatorname{Arctg} \left(\frac{q \sin 2x}{1 - q \cos 2x} \right) \cdot \sin 2ax \cdot \sin x \cdot x^{2b-1} dx = 0 \text{ V. T. 458, N. 14.}$$

$$16) \int \operatorname{Arctg} \left(\frac{q \sin 2x}{1 - q \cos 2x} \right) \cdot \sin 2ax \cdot \cos x \cdot x^{2b} dx = 0 \text{ V. T. 458, N. 12.}$$

$$17) \int \operatorname{Arctg} \left(\frac{q \sin 2x}{1 - q \cos 2x} \right) \cdot \cos 2ax \cdot \sin x \cdot x^{2b} dx = 0 \text{ V. T. 458, N. 12.}$$

$$18) \int \operatorname{Arctg} \left(\frac{q \sin 2x}{1 - q \cos 2x} \right) \cdot \cos 2ax \cdot \cos x \cdot x^{2b-1} dx = 0 \text{ V. T. 458, N. 14.}$$

F. Algébrique;

Circulaire Directe;

TABLE 459.

Lim. diverses

Circulaire Inverse.

$$1) \int_0^1 \sin \left(a \operatorname{Arctg} \frac{x}{q} \right) \frac{dx}{(q^2 + x^2)^{\frac{1}{2}a}} = \frac{1}{(a-1)q^{a-1}} - \frac{\cos \{(a-1) \operatorname{Arccot} q\}}{(a-1)(1+q^2)^{\frac{1}{2}(a-1)}}$$

$$2) \int_0^1 \cos \left(a \operatorname{Arctg} \frac{x}{q} \right) \frac{dx}{(q^2 + x^2)^{\frac{1}{2}a}} = \frac{1}{(a-1)(1+q^2)^{\frac{1}{2}(a-1)}} \sin \{(a-1) \operatorname{Arccot} q\}$$

Sur 1) et 2) v. Lindmann, Gr. Arch. 38, 246.

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Circ. Dir. à un ou trois facteurs; TABLE 460.

Lim. 0 et ∞

Autre Fonction.

$$1) \int \operatorname{Si}(rx) \cdot \sin px \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} e^{-pq} \{Ei(qr) - Ei(-qr)\} [p \geq r], = \frac{\pi}{4q} [e^{-pq} \{Ei(pq) - Ei(-pq)\} - e^{pq} \{Ei(-pq) - Ei(-qr)\}] [p \leq r] \text{ (VIII, 46)}$$

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Circ. Dir. à un ou trois facteurs; TABLE 460, suite.

Lim. 0 et ∞ .

Autre Fonction.

$$2) \int Si(rx) \cdot Cospx \frac{x dx}{q^2 + x^2} = -\frac{\pi}{4} e^{-pq} \{ Ei(qr) - Ei(-qr) \} [p > r], = -\frac{\pi}{4} [e^{-pq} \{ Ei(pq) - Ei(-qr) \} + e^{pq} \{ Ei(-pq) - Ei(-qr) \}] [p < r] \text{ (VIII, 467).}$$

$$3) \int Ci(rx) \cdot Sinpx \frac{x dx}{q^2 + x^2} = -\frac{\pi}{4} (e^{pq} - e^{-pq}) Ei(-qr) [p < r], = \frac{\pi}{4} [e^{-pq} \{ Ei(qr) + Ei(-qr) - Ei(pq) \} - e^{pq} Ei(-pq)] [p > r] \text{ (VIII, 468).}$$

$$4) \int Ci(rx) \cdot Cospx \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} (e^{pq} + e^{-pq}) Ei(-qr) [p \leq r], = \frac{\pi}{4q} [e^{-pq} \{ Ei(qr) + Ei(-qr) - Ei(pq) \} + e^{pq} Ei(-pq)] [p \geq r] \text{ (VIII, 468).}$$

$$5) \int Si(rx) \cdot Cosrx \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} e^{-qr} \{ Ei(-qr) - Ei(qr) \} \text{ (VIII, 467).}$$

$$6) \int Ci(rx) \cdot Sinrx \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} (e^{-qr} - e^{qr}) Ei(-qr) \text{ (VIII, 468).}$$

$$7) \int Si(x) \cdot Sin srx \cdot Sin \{(s-1)rx\} \cdot Cosec x \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} \{ Ei(q) - Ei(-q) \} \frac{e^{-2qr} - e^{-2sr}}{1 - e^{-2qr}} \text{ (VIII, 660).}$$

$$8) \int Si(x) \cdot Sin srx \cdot Cos \{(s-1)rx\} \cdot Cosec x \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} \{ Ei(-q) - Ei(q) \} \frac{1 - e^{-2qr}}{1 - e^{-2sr}} \text{ (VIII, 660).}$$

$$9) \int Ci(x) \cdot Sin srx \cdot Sin \{(s-1)rx\} \cdot Cosec x \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} Ei(-q) \frac{1 + e^{-2qr} - e^{(s-1)2qr} - e^{-2sr}}{1 - e^{-2qr}} \text{ (VIII, 660).}$$

$$10) \int Ci(x) \cdot Sin srx \cdot Cos \{(s-1)rx\} \cdot Cosec x \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} Ei(-q) \frac{1 - e^{-2qr} + e^{(s-1)2qr} - e^{-2sr}}{1 - e^{-2qr}} \text{ (VIII, 660).}$$

$$11) \int Si(x) \cdot Sin 2srx \cdot Cos \{(2s+1)rx\} \cdot Sec x \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} \{ Ei(q) - Ei(-q) \} \frac{e^{-(2s+1)2qr} - e^{-2sr}}{1 + e^{-2qr}} \text{ (VIII, 661).}$$

$$12) \int Si(x) \cdot Cos 2srx \cdot Cos \{(2s+1)rx\} \cdot Sec x \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} \{ Ei(-q) - Ei(q) \} \frac{1 + e^{-(2s+1)2qr}}{1 + e^{-2qr}} \text{ (VIII, 661).}$$

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Circ. Dir. à un ou trois facteurs; TABLE 460, suite.

Lim. 0 et ∞ .

Autre Fonction.

$$13) \int Ci(x) \cdot \sin 2srx \cdot \cos \{(2s+1)rx\} \cdot \sec rx \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} Ei(-q) \frac{1 - e^{-2qr} - e^{4sqr} + e^{-(2s+1)2qr}}{1 + e^{-2qr}} \quad (\text{VIII, 661}).$$

$$14) \int Ci(x) \cdot \cos 2srx \cdot \cos \{(2s+1)rx\} \cdot \sec rx \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} Ei(-q) \frac{1 + e^{-2qr} + e^{4sqr} + e^{-(2s+1)2qr}}{1 + e^{-2qr}} \quad (\text{VIII, 661}).$$

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Circ. Dir. à deux facteurs;

TABLE 461.

Lim. 0 et ∞ .

Autre Fonction.

$$1) \int Si(x) \cdot \sin 4srx \cdot \text{Tgr} x \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} \left[2 Ei(-q) - \{Ei(q) - Ei(-q)\} \frac{2 - e^{-4sqr} + e^{-(2s+1)2qr}}{1 + e^{-2qr}} \right] \quad (\text{VIII, 663}).$$

$$2) \int Si(x) \cdot \sin^2 2srx \cdot \text{Tgr} x \frac{dx}{q^2 + x^2} = \frac{\pi}{8q} \{Ei(-q) - Ei(q)\} \frac{2e^{-2qr} + e^{-4sqr} - e^{-(2s+1)2qr}}{1 + e^{-2qr}} \quad (\text{VIII, 663}).$$

$$3) \int Ci(x) \cdot \sin 4srx \cdot \text{Tgr} x \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} Ei(-q) \cdot (e^{-4sqr} - e^{4sqr}) \frac{1 - e^{-2qr}}{1 + e^{-2qr}} \quad (\text{VIII, 663}).$$

$$4) \int Ci(x) \cdot \sin^2 2srx \cdot \text{Tgr} x \frac{x dx}{q^2 + x^2} = \frac{\pi}{8} Ei(-q) \cdot \{-2 + e^{4sqr} + e^{-4sqr}\} \frac{1 - e^{-2qr}}{1 + e^{-2qr}} \quad (\text{VIII, 663}).$$

$$5) \int Si(x) \cdot \sin 2srx \cdot \text{Cotr} x \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} \left[\{Ei(-q) - Ei(q)\} \frac{2 - e^{-2sqr} + e^{-(s+1)2qr}}{1 - e^{-2qr}} - 2 Ei(-q) \right] \quad (\text{VIII, 662}).$$

$$6) \int Si(x) \cdot \sin^2 srx \cdot \text{Cotr} x \frac{dx}{q^2 + x^2} = \frac{\pi}{8q} \{Ei(q) - Ei(-q)\} \frac{2e^{-2qr} - e^{-4sqr} - e^{-(s+1)2qr}}{1 - e^{-2qr}} \quad (\text{VIII, 662}).$$

$$7) \int Ci(x) \cdot \sin 2srx \cdot \text{Cotr} x \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} Ei(-q) \cdot (e^{2sqr} - e^{-2sqr}) \frac{1 + e^{-2qr}}{1 - e^{-2qr}} \quad (\text{VIII, 662}).$$

$$8) \int Ci(x) \cdot \sin^2 srx \cdot \text{Cotr} x \frac{x dx}{q^2 + x^2} = \frac{\pi}{8} Ei(-q) \cdot (2 - e^{2sqr} - e^{-2sqr}) \frac{1 + e^{-2qr}}{1 - e^{-2qr}} \quad (\text{VIII, 662}).$$

$$9) \int Si(x) \cdot \sin 2srx \cdot \text{Cosec} rx \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} \{Ei(-q) - Ei(q)\} \frac{1 - e^{-2sqr}}{e^{qr} - e^{-qr}} \quad (\text{VIII, 663}).$$

$$10) \int Si(x) \cdot \sin^2 srx \cdot \text{Cosec} rx \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} \{Ei(q) - Ei(-q)\} \frac{1 - e^{-2sqr}}{e^{qr} - e^{-qr}} \quad (\text{VIII, 663}).$$

$$11) \int Ci(x) \cdot \sin 2srx \cdot \operatorname{Cosec} rx \frac{dx}{q^2 + x^2} = \frac{\pi}{2q} Ei(-q) \frac{e^{2sar} - e^{-2sar}}{e^{qr} - e^{-qr}} \quad (\text{VIII, 663}).$$

$$12) \int Ci(x) \cdot \sin^2 srx \cdot \operatorname{Cosec} rx \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} Ei(-q) \frac{2 - e^{2sar} - e^{-2sar}}{e^{qr} - e^{-qr}} \quad (\text{VIII, 663}).$$

$$13) \int Si(x) \cdot \cos^s rx \cdot \sin srx \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+1}q} \{Ei(q) - Ei(-q)\} \{(1 + e^{-2sar})^s - 1\} \quad (\text{VIII, 645}).$$

$$14) \int Si(x) \cdot \cos^s rx \cdot \cos srx \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+1}} \{Ei(-q) - Ei(q)\} (1 + e^{-2sar})^s \quad (\text{VIII, 644}).$$

$$15) \int Ci(x) \cdot \cos^s rx \cdot \sin srx \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+1}} Ei(-q) \cdot (e^{-sar} - e^{sar})(e^{qr} + e^{-qr})^s \quad (\text{VIII, 645}).$$

$$16) \int Ci(x) \cdot \cos^s rx \cdot \cos srx \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+1}q} Ei(-q) \cdot (e^{sar} + e^{-sar})(e^{qr} + e^{-qr})^s \quad (\text{VIII, 644}).$$

$$17) \int Si(x) \cdot \sin^s rx \cdot \sin\left(\frac{1}{2}s\pi - srx\right) \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+1}q} \{Ei(-q) - Ei(q)\} \{(1 - e^{-2sar})^s - 1\} \quad (\text{VIII, 647}).$$

$$18) \int Si(x) \cdot \sin^s rx \cdot \cos\left(\frac{1}{2}s\pi - srx\right) \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+1}} \{Ei(-q) - Ei(q)\} (1 - e^{-2sar})^s \quad (\text{VIII, 646}).$$

$$19) \int Ci(x) \cdot \sin^s rx \cdot \sin\left(\frac{1}{2}s\pi - srx\right) \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+1}} Ei(-q) \cdot \{(-1)^s e^{sar} - e^{-sar}\} (e^{qr} - e^{-qr})^s \quad (\text{VIII, 647}).$$

$$20) \int Ci(x) \cdot \sin^s rx \cdot \cos\left(\frac{1}{2}s\pi - srx\right) \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+1}q} Ei(-q) \cdot \{(-1)^s e^{sar} + e^{-sar}\} (e^{qr} - e^{-qr})^s \quad (\text{VIII, 646}).$$

$$21) \int Si(x) \cdot \cos^s rx \cdot \sin tx \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+1}q} \{Ei(q) - Ei(-q)\} (e^{qr} + e^{-qr})^s e^{-qt} \quad (\text{VIII, 653}).$$

$$22) \int Si(x) \cdot \cos^s rx \cdot \cos tx \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+1}} \{Ei(-q) - Ei(q)\} (e^{qr} + e^{-qr})^s e^{-qt} \quad (\text{VIII, 653}).$$

$$23) \int Ci(x) \cdot \cos^s rx \cdot \sin tx \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+1}} Ei(-q) \cdot (e^{-qt} - e^{qt})(e^{qr} + e^{-qr})^s \quad (\text{VIII, 653}).$$

$$24) \int Ci(x) \cdot \cos^s rx \cdot \cos tx \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+1}q} Ei(-q) \cdot (e^{qt} + e^{-qt})(e^{qr} + e^{-qr})^s \quad (\text{VIII, 653}).$$

$$25) \int Si(x) \cdot \sin^s rx \cdot \sin\left(\frac{1}{2}s\pi - tx\right) \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+1}q} \{Ei(-q) - Ei(q)\} (e^{qr} - e^{-qr})^s e^{-qt} \quad (\text{VIII, 656}).$$

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Circ. Dir. à deux facteurs;

TABLE 461, suite.

Lim. 0 et ∞ .

Autre Fonction.

$$26) \int Si(x) \cdot Sin^s rx \cdot Cos \left(\frac{1}{2} s\pi - tx \right) \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+1}} \{ Ei(-q) - Ei(q) \} (e^{qr} - e^{-qr})^s e^{-qs} \\ \text{(VIII, 655).}$$

$$27) \int Ci(x) \cdot Sin^s rx \cdot Sin \left(\frac{1}{2} s\pi - tx \right) \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+1}} Ei(-q) \cdot \{ (-1)^s e^{qr} - e^{-qr} \} (e^{qr} - e^{-qr})^s \\ \text{(VIII, 656).}$$

$$28) \int Ci(x) \cdot Sin^s rx \cdot Cos \left(\frac{1}{2} s\pi - tx \right) \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+1} q} Ei(-q) \cdot \{ (-1)^s e^{qr} + e^{-qr} \} (e^{qr} - e^{-qr})^s \\ \text{(VIII, 656).}$$

[Dans 21) à 28) on a $t > sr$].

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Circ. Dir. à plusieurs facteurs;

TABLE 462.

Lim. 0 et ∞ .

Autre Fonction.

$$1) \int Si(x) \cdot Cos^s rx \cdot Cos^{s_1} r_1 x \dots Sin \{ (sr + s_1 r_1 + \dots) x \} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+s_1+\dots} q} \{ Ei(q) - \\ - Ei(-q) \} \{ (1 + e^{-2qr})^s (1 + e^{-2qr_1})^{s_1} \dots - 1 \} \text{ (VIII, 645).}$$

$$2) \int Si(x) \cdot Cos^s rx \cdot Cos^{s_1} r_1 x \dots Cos \{ (sr + s_1 r_1 + \dots) x \} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+s_1+\dots} q} \{ Ei(-q) - \\ - Ei(q) \} (1 + e^{-2qr})^s (1 + e^{-2qr_1})^{s_1} \dots \text{ (VIII, 645).}$$

$$3) \int Ci(x) \cdot Cos^s rx \cdot Cos^{s_1} r_1 x \dots Sin \{ (sr + s_1 r_1 + \dots) x \} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+s_1+\dots} q} Ei(-q) \cdot \\ \{ e^{-(sr+s_1 r_1+\dots)x} - e^{(sr+s_1 r_1+\dots)x} \} (e^{qr} + e^{-qr})^s (e^{qr_1} + e^{-qr_1})^{s_1} \dots \text{ (VIII, 646).}$$

$$4) \int Ci(x) \cdot Cos^s rx \cdot Cos^{s_1} r_1 x \dots Cos \{ (sr + s_1 r_1 + \dots) x \} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+s_1+\dots} q} Ei(-q) \cdot \\ \{ e^{(sr+s_1 r_1+\dots)x} + e^{-(sr+s_1 r_1+\dots)x} \} (e^{qr} + e^{-qr})^s (e^{qr_1} + e^{-qr_1})^{s_1} \dots \text{ (VIII, 645).}$$

$$5) \int Si(x) \cdot Sin^s rx \cdot Sin^{s_1} r_1 x \dots Sin \{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) x \} \frac{dx}{q^2 + x^2} = \\ = \frac{\pi}{2^{s+s_1+\dots} q} \{ Ei(-q) - Ei(q) \} \{ (1 - e^{-2qr})^s (1 - e^{-2qr_1})^{s_1} \dots - 1 \} \text{ (VIII, 648).}$$

$$6) \int Si(x) \cdot Sin^s rx \cdot Sin^{s_1} r_1 x \dots Cos \{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) x \} \frac{x dx}{q^2 + x^2} = \\ = \frac{\pi}{2^{s+s_1+\dots} q} \{ Ei(-q) - Ei(q) \} (1 - e^{-2qr})^s (1 - e^{-2qr_1})^{s_1} \dots \text{ (VIII, 647).}$$

F. Alg. rat. fract. à dén. $q^2 + x^2$;

Circ. Dir. à plusieurs facteurs; TABLE 462, suite.

Lim. 0 et ∞ .

Autre Fonction.

$$7) \int \text{Ci}(x) \cdot \text{Sin}^s r x \cdot \text{Sin}^{s_1} r_1 x \dots \text{Sin} \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) x \right\} \frac{x dx}{q^2 + x^2} = \\ = \frac{\pi}{2^{s+s_1+\dots} q} \text{Ei}(-q) \cdot \{ (-1)^{s+s_1+\dots} e^{(sr+s_1 r_1+\dots)q} - e^{-(sr+s_1 r_1+\dots)q} \} (e^{qr} - e^{-qr})^s \\ (e^{qr_1} - e^{-qr_1})^{s_1} \dots \text{(VIII, 648)}.$$

$$8) \int \text{Ci}(x) \cdot \text{Sin}^s r x \cdot \text{Sin}^{s_1} r_1 x \dots \text{Cos} \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) x \right\} \frac{dx}{q^2 + x^2} = \\ = \frac{\pi}{2^{s+s_1+\dots} q} \text{Ei}(-q) \cdot \{ (-1)^{s+s_1+\dots} e^{(sr+s_1 r_1+\dots)q} + e^{-(sr+s_1 r_1+\dots)q} \} (e^{qr} - e^{-qr})^s \\ (e^{qr_1} - e^{-qr_1})^{s_1} \dots \text{(VIII, 647)}.$$

$$9) \int \text{Si}(x) \cdot \text{Cos}^s r x \dots \text{Sin}^{s_1} u x \dots \text{Sin} \left\{ (t + \dots) \frac{1}{2} \pi - (sr + \dots + t u + \dots) x \right\} \frac{dx}{q^2 + x^2} = \\ = \frac{\pi}{2^{s+s_1+\dots+t+\dots} q} \{ \text{Ei}(-q) - \text{Ei}(q) \} \{ (1 + e^{-2qr})^s \dots (1 - e^{-2qu})^{s_1} \dots - 1 \} \text{(VIII, 648)}.$$

$$10) \int \text{Si}(x) \cdot \text{Cos}^s r x \dots \text{Sin}^{s_1} u x \dots \text{Cos} \left\{ (t + \dots) \frac{1}{2} \pi - (sr + \dots + t u + \dots) x \right\} \frac{x dx}{q^2 + x^2} = \\ = \frac{\pi}{2^{s+s_1+\dots+t+\dots} q} \{ \text{Ei}(-q) - \text{Ei}(q) \} (1 + e^{-2qr})^s \dots (1 - e^{-2qu})^{s_1} \dots \text{(VIII, 648)}.$$

$$11) \int \text{Ci}(x) \cdot \text{Cos}^s r x \dots \text{Sin}^{s_1} u x \dots \text{Sin} \left\{ (t + \dots) \frac{1}{2} \pi - (sr + \dots + t u + \dots) x \right\} \frac{x dx}{q^2 + x^2} = \\ = \frac{\pi}{2^{s+s_1+\dots+t+\dots} q} \text{Ei}(-q) \cdot \{ (-1)^{t+\dots} e^{(sr+\dots+t u+\dots)q} - e^{-(sr+\dots+t u+\dots)q} \} (e^{qr} + e^{-qr})^s \dots \\ (e^{qu} - e^{-qu})^{s_1} \dots \text{(VIII, 649)}.$$

$$12) \int \text{Ci}(x) \cdot \text{Cos}^s r x \dots \text{Sin}^{s_1} u x \dots \text{Cos} \left\{ (t + \dots) \frac{1}{2} \pi - (sr + \dots + t u + \dots) x \right\} \frac{dx}{q^2 + x^2} = \\ = \frac{\pi}{2^{s+s_1+\dots+t+\dots} q} \text{Ei}(-q) \cdot \{ (-1)^{t+\dots} e^{(sr+\dots+t u+\dots)q} + e^{-(sr+\dots+t u+\dots)q} \} (e^{qr} + e^{-qr})^s \dots \\ (e^{qu} - e^{-qu})^{s_1} \dots \text{(VIII, 648)}.$$

F. Alg. rat. fract. à dén. $q^2 - x^2$;

Circ. Dir. à un ou deux facteurs; TABLE 463.

Lim. 0 et ∞ .

Autre Fonction.

$$1) \int \text{Si}(rx) \cdot \text{Sin} p x \frac{dx}{q^2 - x^2} = -\frac{\pi}{2q} \text{Cos} p q \cdot \text{Si}(qr) [p \geq r], = -\frac{\pi}{2q} \text{Cos} p q \cdot \text{Si}(pq) + \\ + \frac{\pi}{2q} \text{Sin} p q \cdot \{ \text{Ci}(pq) - \text{Ci}(qr) \} [p \leq r] \text{(VIII, 461)}.$$

$$2) \int Si(rx) \cdot Cospx \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} Sinpq \cdot Si(qr) [p > r], = \frac{\pi}{2} Sinpq \cdot Si(pq) - \\ - \frac{\pi}{2} Cospq \cdot \{Ci(qr) - Ci(pq)\} [p < r] \text{ (VIII, 469).}$$

$$3) \int Si(rx) \cdot Cosrx \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} Sinqr \cdot Si(qr) \text{ (VIII, 469).}$$

$$4) \int Ci(rx) \cdot Sinpx \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} Sinpq \cdot \left\{ \frac{\pi}{2} - Si(qr) \right\} [p < r], = \frac{\pi}{2} Cospq \cdot \{Ci(qr) - Ci(pq)\} + \\ + \frac{\pi}{2} Sinpq \cdot \left\{ \frac{\pi}{2} - Si(pq) \right\} [p > r] \text{ (VIII, 470).}$$

$$5) \int Ci(rx) \cdot Sinrx \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} Sinqr \cdot \left\{ \frac{\pi}{2} - Si(qr) \right\} \text{ (VIII, 470).}$$

$$6) \int Ci(rx) \cdot Cospx \frac{dx}{q^2 - x^2} = -\frac{\pi}{2q} Cospq \cdot \left\{ \frac{\pi}{2} - Si(qr) \right\} [p \leq r], = \frac{\pi}{2q} Sinpq \cdot \{Ci(qr) - Ci(pq)\} - \\ - \frac{\pi}{2q} Cospq \cdot \left\{ \frac{\pi}{2} - Si(pq) \right\} [p \geq r] \text{ (VIII, 462).}$$

$$7) \int Si(x) \cdot Sin4sr x \cdot Tgrx \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} Si(q) \cdot Sin^2 sqr \cdot Tgqr \text{ (VIII, 663).}$$

$$8) \int Si(x) \cdot Sin^2 srx \cdot Tgrx \frac{dx}{q^2 - x^2} = -\frac{\pi}{4q} Si(q) \cdot \{1 + Sin4sqr \cdot Tgqr\} \text{ (VIII, 663).}$$

$$9) \int Si(x) \cdot Sin2sr x \cdot Cotrx \frac{x dx}{q^2 - x^2} = \pi Si(q) \cdot Sin^2 sqr \cdot Cotqr \text{ (VIII, 662).}$$

$$10) \int Si(x) \cdot Sin^2 sr x \cdot Cotrx \frac{dx}{q^2 - x^2} = \frac{\pi}{4q} Si(q) \cdot \{1 - Sin2sqr \cdot Cotqr\} \text{ (VIII, 662).}$$

$$11) \int Si(x) \cdot Sin2sr x \cdot Cosecrx \frac{x dx}{q^2 - x^2} = \pi Si(q) \cdot Sin^2 sqr \cdot Cosecqr \text{ (VIII, 663).}$$

$$12) \int Si(x) \cdot Sin^2 sr x \cdot Cosecrx \frac{dx}{q^2 - x^2} = -\frac{\pi}{4q} Si(q) \cdot Sin2sqr \cdot Cosecqr \text{ (VIII, 663).}$$

$$13) \int Si(x) \cdot Cos^s rx \cdot Sin sr x \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} Si(q) \cdot \{2^{-s} - Cos^s qr \cdot Cos sqr\} \text{ (VIII, 645).}$$

$$14) \int Si(x) \cdot Cos^s rx \cdot Cos sr x \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \{Si(q) \cdot Cos^s qr \cdot Sin sqr - 2^{-s} Ci(q)\} \text{ (VIII, 645).}$$

$$15) \int Si(x) \cdot Sin^s rx \cdot Sin \left\{ \frac{1}{2} s\pi - sr x \right\} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} Si(q) \cdot \left\{ -2^{-s} + Sin^s qr \cdot Cos \left(\frac{1}{2} s\pi - sqr \right) \right\} \\ \text{ (VIII, 647).}$$

F. Alg. rat. fract. à dén. $q^2 - x^2$;

Circ. Dir. à un ou deux facteurs; TABLE 463, suite.

Lim. 0 et ∞ .

Autre Fonction.

$$16) \int Si(x) \cdot Sin^s rx \cdot Cos \left\{ \frac{1}{2} s\pi - srx \right\} \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} \left\{ 2^{-s} Ci(q) + Si(q) \cdot Sin^s qr \cdot Sin \left(\frac{1}{2} s\pi - sqr \right) \right\} \quad (\text{VIII, 647}).$$

$$17) \int Si(x) \cdot Cos^s rx \cdot Sin tx \frac{dx}{q^2 - x^2} = -\frac{\pi}{2q} Si(q) \cdot Cos^s qr \cdot Cos qt \quad (\text{VIII, 653}).$$

$$18) \int Si(x) \cdot Cos^s rx \cdot Cost x \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} Si(q) \cdot Cos^s qr \cdot Sin qt \quad (\text{VIII, 653}).$$

$$19) \int Si(x) \cdot Sin^s rx \cdot Sin \left(\frac{1}{2} s\pi - tx \right) \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} Si(q) \cdot Sin^s qr \cdot Cos \left(\frac{1}{2} s\pi - qt \right) \quad (\text{VIII, 656}).$$

$$20) \int Si(x) \cdot Sin^s rx \cdot Cos \left(\frac{1}{2} s\pi - tx \right) \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} Si(q) \cdot Sin^s qr \cdot Sin \left(\frac{1}{2} s\pi - qt \right) \quad (\text{VIII, 656}).$$

[Dans 17) à 20) on a $t > sr$].

F. Alg. rat. fract. à dén. $q^2 - x^2$;

Circ. Dir. à plusieurs facteurs;

TABLE 464.

Lim. 0 et ∞ .

Autre Fonction.

$$1) \int Si(x) \cdot Sin srx \cdot Sin \{(s-1)rx\} \cdot Cos srx \frac{dx}{q^2 - x^2} = \frac{\pi}{4q} Si(q) \cdot \{1 + Cos 2sqr - Sin 2sqr \cdot Cot qr\} \quad (\text{VIII, 660}).$$

$$2) \int Si(x) \cdot Sin srx \cdot Cos \{(s-1)rx\} \cdot Cos srx \frac{x dx}{q^2 - x^2} = -\frac{\pi}{4} [Ci(q) + Si(q) \cdot \{Sin 2sqr - (1 - Cos 2sqr) Cot qr\}] \quad (\text{VIII, 660}).$$

$$3) \int Si(x) \cdot Sin 2srx \cdot Cos \{(2s+1)rx\} \cdot Sec srx \frac{dx}{q^2 - x^2} = \frac{\pi}{4q} Si(q) \cdot \{1 - Cos 4sqr + Sin 4sqr \cdot Tg qr\} \quad (\text{VIII, 661}).$$

$$4) \int Si(x) \cdot Cos 2srx \cdot Cos \{(2s+1)rx\} \cdot Sec srx \frac{x dx}{q^2 - x^2} = \frac{\pi}{4} [Si(q) \cdot \{Sin 4sqr - (1 - Cos 4sqr) Tg qr\} - Ci(q)] \quad (\text{VIII, 661}).$$

$$5) \int Si(x) \cdot Cos^s rx \cdot Cos^{s_1} r_1 x \dots Sin \{(sr + s_1 r_1 + \dots)x\} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} Si(q) \cdot [2^{-s-s_1-\dots} - Cos^s qr \cdot Cos^{s_1} qr_1 \dots Cos \{(sr + s_1 r_1 + \dots)q\}] \quad (\text{VIII, 646}).$$

$$6) \int Si(x) \cdot Cos^s rx \cdot Cos^{s_1} r_1 x \dots Cos \{(sr + s_1 r_1 + \dots)x\} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} [Si(q) \cdot Cos^s qr \cdot Cos^{s_1} qr_1 \dots Sin \{(sr + s_1 r_1 + \dots)q\} - 2^{-s-s_1-\dots} Ci(q)] \quad (\text{VIII, 646}).$$

F. Alg. rat. fract. à dén. $q^2 - x^2$;

Circ. Dir. à plusieurs facteurs; TABLE 464, suite.

Lim. 0 et ∞ .

Autre Fonction.

$$7) \int Si(x) \cdot Sin^s r x \cdot Sin^{s_1} r_1 x \dots Sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) x \right\} \frac{dx}{q^2 - x^2} = \\ = \frac{\pi}{2q} Si(q) \cdot \left[-2^{-s-s_1-\dots} + Sin^s q r \cdot Sin^{s_1} q r_1 \dots Cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) q \right\} \right] \\ (VIII, 648).$$

$$8) \int Si(x) \cdot Sin^s r x \cdot Sin^{s_1} r_1 x \dots Cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) x \right\} \frac{x dx}{q^2 - x^2} = \\ = -\frac{\pi}{2} \left[2^{-s-s_1-\dots} Ci(q) + Si(q) \cdot Sin^s q r \cdot Sin^{s_1} q r_1 \dots Sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - \right. \right. \\ \left. \left. - (sr + s_1 r_1 + \dots) q \right\} \right] (VIII, 648).$$

$$9) \int Si(x) \cdot Cos^s r x \dots Sin^t u x \dots Sin \left\{ (t + \dots) \frac{1}{2} \pi - (sr + \dots + tu + \dots) x \right\} \frac{dx}{q^2 - x^2} = \\ = \frac{\pi}{2q} Si(q) \cdot \left[-2^{-s-\dots-t-\dots} + Cos^s q r \dots Sin^t q u \dots Cos \left\{ (t + \dots) \frac{1}{2} \pi - \right. \right. \\ \left. \left. - (sr + \dots + tu + \dots) q \right\} \right] (VIII, 649).$$

$$10) \int Si(x) \cdot Cos^s r x \dots Sin^t u x \dots Cos \left\{ (t + \dots) \frac{1}{2} \pi - (sr + \dots + tu + \dots) x \right\} \frac{x dx}{q^2 - x^2} = \\ = -\frac{\pi}{2} \left[2^{-s-\dots-t-\dots} Ci(q) + Si(q) \cdot Cos^s q r \dots Sin^t q u \dots Sin \left\{ (t + \dots) \frac{1}{2} \pi - \right. \right. \\ \left. \left. - (sr + \dots + tu + \dots) q \right\} \right] (VIII, 649).$$

F. Algébrique;

Circulaire Directe;

TABLE 465.

Lim. 0 et ∞ .

Autre Fonction. Autre forme; $[p^2 < 1]$.

$$1) \int Si(x) \frac{Sin r x - p^{s-1} Sin s r x + p^s Sin \{(s-1)r x\}}{1 - 2p Cos r x + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} \{ Ei(q) - \\ - Ei(-q) \} \frac{e^{-qr} - p^{s-1} e^{-sqr}}{1 - p e^{-qr}} (VIII, 664).$$

$$2) \int Si(x) \frac{1 - p Cos r x - p^s Cos s r x + p^{s+1} Cos \{(s-1)r x\}}{1 - 2p Cos r x + p^2} \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} \{ Ei(-q) - \\ - Ei(q) \} \frac{1 - p^s e^{-sqr}}{1 - p e^{-qr}} (VIII, 664).$$

F. Algébrique;

Circulaire Directe;

TABLE 465, suite.

Lim. 0 et ∞ .

Autre Fonction. Autre forme; [$p^2 < 1$].

$$3) \int Ci(x) \frac{\sin rx - p^{s-1} \sin srx + p^s \sin \{(s-1)rx\}}{1 - 2p \cos rx + p^2} \frac{x dx}{q^2 + x^2} = \frac{\pi}{4p} Ei(-q) \cdot \left\{ \frac{1 - p^s e^{-q^2}}{1 - p e^{-q^2}} - \frac{1 - p^s e^{q^2}}{1 - p e^{q^2}} \right\} \quad (\text{VIII, 664}).$$

$$4) \int Ci(x) \frac{1 - p \cos rx - p^s \cos srx + p^{s+1} \cos \{(s-1)rx\}}{1 - 2p \cos rx + p^2} \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} Ei(-q) \cdot \left\{ \frac{1 - p^s e^{q^2}}{1 - p e^{q^2}} + \frac{1 - p^s e^{-q^2}}{1 - p e^{-q^2}} \right\} \quad (\text{VIII, 664}).$$

$$5) \int Si(x) \frac{\sin rx - p^{s-1} \sin srx + p^s \sin \{(s-1)rx\}}{1 - 2p \cos rx + p^2} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} Si(q) \cdot \frac{p - \cos qr + p^{s-1} \cos sqr - p^s \cos \{(s-1)qr\}}{1 - 2p \cos qr + p^2} \quad (\text{VIII, 664}).$$

$$6) \int Si(x) \frac{1 - p \cos rx - p^s \cos srx + p^{s+1} \cos \{(s-1)rx\}}{1 - 2p \cos rx + p^2} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \left\{ -Ci(q) + p Si(q) \cdot \frac{\sin qr - p^{s-1} \sin sqr + p^s \sin \{(s-1)qr\}}{1 - 2p \cos qr + p^2} \right\} \quad (\text{VIII, 664}).$$

$$7) \int T(p, x) \frac{\sin x}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = \frac{\pi}{12} F' \{ \sqrt{1 - p^2} \} + \frac{1}{6} E'(p) \cdot [F'(p)]^2 - \frac{1}{6} F'(p) \cdot \frac{4(1 - p^2)}{p} \quad (\text{VIII, 417}).$$

$$8) \int T(p, x) \frac{Tgx}{\sqrt{1 - p^2 \sin^2 x}} \frac{dx}{x} = \frac{\pi}{12} F' \{ \sqrt{1 - p^2} \} + \frac{1}{6} E'(p) \cdot [F'(p)]^2 - \frac{1}{6} F'(p) \cdot \frac{4(1 - p^2)}{p} \quad (\text{VIII, 417}).$$

$$9) \int T(p, 2x) \frac{Tgx}{\sqrt{1 - p^2 \sin^2 2x}} \frac{dx}{x} = \frac{\pi}{12} F' \{ \sqrt{1 - p^2} \} + \frac{1}{6} E'(p) \cdot [F'(p)]^2 - \frac{1}{6} F'(p) \cdot \frac{4(1 - p^2)}{p} \quad (\text{VIII, 417}).$$

F. Algébrique;

Circulaire Inverse;

TABLE 466.

Lim. diverses.

Autre Fonction.

$$1) \int_0^1 F(p, \text{Arcsin } x) \frac{x dx}{1 + p x^2} = \frac{1}{4p} F(p) \cdot \frac{(1+p)\sqrt{p}}{2} + \frac{\pi}{16p} F' \{ \sqrt{1 - p^2} \} \quad (\text{VIII, 548}).$$

$$2) \int_0^1 F(p, \text{Arcsin } x) \frac{x dx}{1 - p x^2} = \frac{1}{4p} F(p) \cdot \frac{2}{(1-p)\sqrt{p}} - \frac{\pi}{16p} F' \{ \sqrt{1 - p^2} \} \quad (\text{VIII, 548}).$$

$$3) \int_0^1 F(p, \operatorname{Arcsin} x) \frac{x dx}{1-p^2 x^4} = \frac{1}{8p} F'(p) \cdot 2 \frac{1+p}{1-p} \quad (\text{VIII, 548}).$$

$$4) \int_0^1 F(p, \operatorname{Arcsin} x) \frac{x^3 dx}{1-p^2 x^4} = \frac{1}{8p^3} F'(p) \cdot 2 \frac{4}{(1-p^2)p} - \frac{\pi}{16p^2} F' \{ \sqrt{1-p^2} \} \quad (\text{VIII, 548}).$$

$$5) \int_0^1 F(p, \operatorname{Arcsin} x) \frac{x dx}{1-x^2+x^2 \sqrt{1-p^2}} = \frac{1}{4} \frac{F'(p)}{1-\sqrt{1-p^2}} \cdot 2 \frac{2}{(1+\sqrt{1-p^2})\sqrt{1-p^2}} \quad (\text{VIII, 548}).$$

$$6) \int_0^1 E(p, \operatorname{Arcsin} x) \frac{x dx}{1-p^2 x^4} = \frac{1}{2p^2} \left[(2-p^2) F'(p) - \left\{ 2 + \frac{1}{2} 2(1-p^2) \right\} E'(p) \right] \quad (\text{VIII, 548}).$$

$$7) \int_0^1 F(p, \operatorname{Arcsin} x) \frac{x}{1-p^2 x^2 \sin^2 \lambda} \frac{dx}{\sqrt{1-p^2 x^2}} = \frac{1}{p^2 \sin 2\lambda} \left\{ \pi F(p, \lambda) - \right. \\ \left. - 2 F'(p) \cdot \operatorname{Arctg} [Tg \lambda \cdot \sqrt{1-p^2}] \right\} \quad (\text{VIII, 548}).$$

$$8) \int_0^1 E(p, \operatorname{Arcsin} x) \frac{x}{1-p^2 x^2 \sin^2 \lambda} \frac{dx}{\sqrt{1-p^2 x^2}} = \frac{1}{p^2 \sin 2\lambda} \left\{ \pi E(p, \lambda) - \right. \\ \left. - 2 E'(p) \cdot \operatorname{Arctg} [Tg \lambda \cdot \sqrt{1-p^2}] - \pi \operatorname{Cot} \lambda \cdot \{ 1 - \sqrt{1-p^2 \sin^2 \lambda} \} \right\} \quad (\text{VIII, 548}).$$

$$9) \int_r^r F \left\{ \sqrt{1-q^2 r^2}, \operatorname{Arctg} \frac{x}{qr} \right\} \frac{dx}{\sqrt{(r^2-x^2)(x^2-q^2)}} = \frac{1}{2q} F' \left\{ \sqrt{1-q^2 r^2} \right\} \cdot F' \left\{ \sqrt{\left(1-\frac{r^2}{q^2}\right)} \right\} \quad (\text{VIII, 550}).$$

$$10) \int_r^r F \left\{ \sqrt{\frac{q^2 r^2-1}{q^2 r^2}}, \operatorname{Arccot} \frac{x}{qr} \right\} \frac{dx}{\sqrt{(r^2-x^2)(x^2-q^2)}} = \frac{1}{2r} F' \left\{ \sqrt{\frac{q^2 r^2-1}{q^2 r^2}} \right\} \cdot F' \left\{ \sqrt{\left(1-\frac{q^2}{r^2}\right)} \right\} \quad (\text{VIII, 550}).$$

$$11) \int_r^r E \left\{ \sqrt{1-q^2 r^2}, \operatorname{Arctg} \frac{x}{qr} \right\} \frac{dx}{\sqrt{(r^2-x^2)(x^2-q^2)}} = \frac{1}{2q} E' \left\{ \sqrt{1-q^2 r^2} \right\} \cdot F' \left\{ \sqrt{\left(1-\frac{r^2}{q^2}\right)} \right\} + \\ + \frac{1-q^2 r^2}{2q(1+r^2)} F' \left\{ \sqrt{\left(1-\frac{r^2(1+q^2)^2}{q^2(1+r^2)^2}\right)} \right\} \quad (\text{VIII, 550}).$$

$$12) \int_r^r E \left\{ \sqrt{\frac{q^2 r^2-1}{q^2 r^2}}, \operatorname{Arccot} \frac{x}{qr} \right\} \frac{dx}{\sqrt{(r^2-x^2)(x^2-q^2)}} = \frac{1}{2r} E' \left\{ \sqrt{\frac{q^2 r^2-1}{q^2 r^2}} \right\} \cdot F' \left\{ \sqrt{\left(1-\frac{q^2}{r^2}\right)} \right\} - \\ - \frac{1-q^2 r^2}{2q^2 r(1+r^2)} F' \left\{ \sqrt{\left(1-\frac{r^2(1+q^2)^2}{q^2(1+r^2)^2}\right)} \right\} \quad (\text{VIII, 551}).$$

F. Exponentielle;

Logarithmique;

Circulaire Directe.

TABLE 467.

Lim. 0 et ∞ .

$$1) \int e^{-px} \ln x \cdot \sin qx \, dx = \frac{1}{p^2 + q^2} \left\{ p \operatorname{Arctg} \frac{q}{p} - q A - \frac{q}{2} \ln(p^2 + q^2) \right\} \quad (\text{IV}, 563).$$

$$2) \int e^{-px} \ln x \cdot \cos qx \, dx = \frac{-1}{p^2 + q^2} \left\{ \frac{p}{2} \ln(p^2 + q^2) + q \operatorname{Arctg} \frac{q}{p} + p A \right\} \quad (\text{IV}, 563).$$

$$3) \int e^{-px} \ln x \cdot \sin^2 qx \, dx = \frac{1}{p(p^2 + 4q^2)} \left\{ 2pq \operatorname{Arctg} \frac{2q}{p} + \frac{1}{2} p^2 \ln(p^2 + 4q^2) - (p + 4q^2) \ln p - 4q^2 A \right\}$$

V. T. 256, N. 2 et T. 467, N. 2.

$$4) \int e^{-px} \ln(\sin^2 qx) \cdot dx = -\frac{1}{p} \ln 2 - p \sum_1^{\infty} \frac{1}{n} \frac{1}{p^2 + n^2 q^2} \quad (\text{IV}, 563).$$

$$5) \int e^{-px} \ln(\cos^2 qx) \cdot dx = -\frac{1}{p} \ln 2 - p \sum_1^{\infty} \frac{(-1)^n}{n} \frac{1}{p^2 + n^2 q^2} \quad (\text{IV}, 563).$$

$$6) \int e^{-px} \ln(\operatorname{Tg}^2 qx) \cdot dx = -2p \sum_1^{\infty} \frac{1}{2n-1} \frac{1}{p^2 + (2n-1)^2 q^2} \quad \text{V. T. 467, N. 4, 5.}$$

$$7) \int e^{-x^2} \ln(\sin^2 qx) \cdot dx = \sqrt{\pi} \cdot \left\{ -\ln 2 - \sum_1^{\infty} \frac{1}{n} e^{-(nq)^2} \right\} \quad (\text{IV}, 563).$$

$$8) \int e^{-x^2} \ln(\cos^2 qx) \cdot dx = \sqrt{\pi} \cdot \left\{ -\ln 2 - \sum_1^{\infty} \frac{(-1)^n}{n} e^{-(nq)^2} \right\} \quad (\text{IV}, 563).$$

$$9) \int e^{-x^2} \ln(\operatorname{Tg}^2 qx) \cdot dx = 2 \sqrt{\pi} \cdot \sum_1^{\infty} \frac{-1}{2n-1} e^{-(2n-1)^2 q^2} \quad \text{V. T. 467, N. 7, 8.}$$

$$10) \int e^{-x^2} \ln(1 - 2p \cos 2ax + p^2) \cdot dx = \sqrt{\pi} \cdot \sum_1^{\infty} \frac{1}{n} p^n e^{-a^2 n^2} \quad (\text{IV}, 563).$$

$$11) \int \ln(1 - 2e^{-px} \cos qx + e^{-2px}) \cdot dx = -\frac{p\pi^2}{3(p^2 + q^2)}$$

$$12) \int \ln(1 + 2e^{-px} \cos qx + e^{-2px}) \cdot dx = \frac{p\pi^2}{3(p^2 + q^2)} \quad \text{Sur 11) et 12) v. Brown Mathem. I. 297.}$$

F. Exponent. monôme;

Logarithmique;

Circulaire Directe entière.

TABLE 468.

Lim. 0 et $\frac{\pi}{2}$.

$$1) \int \ln(1 - e^{-2qx} \operatorname{Tg} x) \cdot dx = -\pi \left\{ q(\ln q - 1) + \frac{1}{2} \ln 2 q\pi - \ln(q+1) \right\} \quad \text{V. T. 354, N. 6.}$$

$$2) \int e^{-1+2qx} \ln(2 \sec x - 1) \cdot \operatorname{Tg} x \, dx = \frac{1}{2} \left\{ \ln(e^{-q}) \right\}^2 \quad \text{V. T. 359, N. 1.}$$

F. Exponent. monôme;

Logarithmique;

Circulaire Directe entière.

TABLE 468, suite.

Lim. 0 et $\frac{\pi}{2}$.

$$3) \int e^{p \cos 2x} \log \sin x \cdot \cos(p \sin 2x + 2x) dx = \frac{\pi}{4p} (1 - e^{-p}) \quad \text{V. T. 271, N. 8.}$$

$$4) \int e^{p \cos 2x} \log \cos x \cdot \cos(p \sin 2x + 2x) dx = \frac{\pi}{4p} (1 - e^p) \quad \text{V. T. 272, N. 5.}$$

$$5) \int e^{p \cos 2x} \log \tan x \cdot \cos(p \sin 2x + 2x) dx = \frac{\pi}{4p} (e^p - e^{-p}) \quad \text{V. T. 278, N. 1.}$$

$$6) \int e^{p \cos 2x} \log^2 \left(\frac{\pi}{4} \pm x \right) \cdot \sin(p \sin 2x + 2x) dx = \pm \infty \quad \text{V. T. 278, N. 2.}$$

F. Exponent. monôme;

Logarithmique;

Circulaire Directe fract.

TABLE 469.

Lim. 0 et $\frac{\pi}{2}$.

$$1) \int e^{-q \cos x} \log \sin x \frac{dx}{\sin^2 x} = \frac{1}{q} \left[\cos q \cdot \text{Ci}(q) - \sin q \cdot \left\{ \frac{1}{2} \pi - \text{Si}(q) \right\} \right] \quad \text{V. T. 272, N. 2.}$$

$$2) \int e^{-p \tan^2 x} \log \tan x \cdot \tan^{2a} x \frac{2p \sin^2 x - (2a-1) \cos^2 x}{\sin^2 2x} dx = \frac{1}{8(2p)^{a-1}} 1^{a-1/2} \sqrt{\frac{\pi}{p}} \quad \text{V. T. 272, N. 7.}$$

$$3) \int e^{-p \tan^2 x} \log \tan x \cdot \tan^{2a+1} x \frac{p \sin^2 x - a \cos^2 x}{\sin^2 2x} dx = \frac{1}{2^{a+1} p^a} 1^{a-1/2} \quad \text{V. T. 272, N. 6.}$$

$$4) \int e^{-q(\tan^2 x + \cos^2 x)} \log \tan x \cdot \tan^{2a+1} x \frac{(2a+1) \sin 2x + 2q \cos 2x}{\sin^2 2x} dx = -\frac{1}{32} e^{-1} \sqrt{\frac{\pi}{q}} \cdot \sum_{n=0}^{a+1} \frac{1}{(2q)^n} \frac{(a-n+1)^{2n+1}}{2^n 1^{n/2}} \quad \text{V. T. 272, N. 18.}$$

$$5) \int e^{-\tan^2 x} \log \tan x \cdot \tan^{2p} x \frac{2 \sin^2 x - \cos^2 x}{\sin^{p+1} 2x} dx = \frac{1}{2^{p+2} p^2} \sqrt{\pi} \quad \text{V. T. 272, N. 8.}$$

$$6) \int e^{-q \tan x} \log \cos x \frac{dx}{\cos^2 x} = \frac{1}{q} \left[\text{Ci}(q) \cdot \cos q - \sin q \cdot \left\{ \frac{\pi}{2} - \text{Si}(q) \right\} \right] \quad \text{V. T. 271, N. 3.}$$

$$7) \int e^{-p \tan^2 x} \log^2 \left(\frac{\pi}{4} \pm x \right) \frac{dx}{\cos^2 x} = \pm \frac{2}{p} \{ e^p \text{Ei}(-p) - e^{-p} \text{Ei}(p) \} \quad \text{V. T. 272, N. 3.}$$

$$8) \int e^{-p \tan^2 x} \log^2 \left(\frac{\pi}{4} \pm x \right) \frac{p \sin x - \cos x}{\cos^2 x} dx = \mp 2 \{ e^{-p} \text{Ei}(p) + e^p \text{Ei}(-p) \} \quad \text{V. T. 272, N. 4.}$$

$$9) \int e^{-p \tan^2 x} \log^2 \left(\frac{\pi}{4} \pm x \right) \frac{\tan x}{\cos^2 x} dx = \mp \frac{1}{p} \{ (1+p) e^{-p} \text{Ei}(p) - (1-p) e^p \text{Ei}(-p) \}$$

V. T. 469, N. 7, 8.

$$10) \int l Tg x \cdot (p e^{-p Tg x} - q e^{-q Tg x}) \frac{dx}{\cos^2 x} = l \frac{q}{p} \text{ V. T. 272, N. 14.}$$

$$11) \int e^{-Tg^p x} l Tg x \cdot Tg^{q-1} x \frac{p \sin^p x - q \cos^q x}{\cos^{p+1} x} dx = \frac{1}{p} \Gamma\left(\frac{q}{p}\right) \text{ V. T. 272, N. 8.}$$

$$12) \int e^{i q \operatorname{Cosec} x} l (2 \operatorname{Cosec} x - 1) \frac{dx}{Tg x} = \frac{1}{2} \{li(\sigma^{-q})\}^2 \text{ V. T. 359, N. 1.}$$

$$13) \int e^{-p \operatorname{Cot} x} l Tg^2 \left(\frac{\pi}{4} \pm x\right) \frac{p \operatorname{Cot} x - 1}{\sin^2 x} dx = \pm 2 \{e^{-p} Ei(p) + e^p Ei(-p)\} \text{ V. T. 273, N. 1.}$$

$$14) \int e^{-Tg^2 x} l Tg x \frac{1 - \cos 2x \cdot \sin^2 x}{\cos^2 x \cdot \sin^2 2x} dx = \frac{3}{8} \sqrt{\pi} \text{ V. T. 272, N. 9.}$$

$$15) \int e^{-Tg^2 x} l \sin 2x \frac{1 - \cos 2x \cdot \sin^2 x}{\cos^2 x \cdot \sin^2 2x} dx = \frac{1}{8} \sqrt{\pi} \text{ V. T. 272, N. 10.}$$

$$16) \int e^{-q Tg x} l Tg x \frac{q \sin x - p \cos x}{\sin 2x} \frac{Tg^p x}{\cos x} dx = \frac{1}{2 q^p} \Gamma(p) \text{ V. T. 272, N. 1.}$$

$$17) \int e^{-p Tg x} l \cos x \frac{2 Tg 2x \cdot \cos^2 x - p}{\cos^2 x \cdot \cos 2x} dx = \frac{1}{2} \{e^{-p} Ei(p) + e^p Ei(-p)\} \text{ V. T. 272, N. 4.}$$

$$18) \int e^{-\cos^{2p} x} l Tg x \cdot (\sin^{2p} x - 2 \cos^{2p} x) \frac{dx}{\sin^{2p+1} x \cdot \cos^{1-p} x} = \frac{1}{2 p^2} \sqrt{\pi} \text{ V. T. 273, N. 5.}$$

$$19) \int e^{-\cos^p x} l Tg x \frac{q \sin^q x - p \cos^p x}{\sin^{p+q+1} x \cdot \cos^{1-q} x} dx = \frac{1}{p} \Gamma\left(\frac{q}{p}\right) \text{ V. T. 273, N. 5.}$$

$$20) \int e^{-p \cos^2 x} l Tg x \frac{(2a+1) \sin^2 x - 2p \cos^2 x}{\sin^2 2x \cdot Tg^{2a+2} x} dx = \frac{1}{8(2p)^a} 1^{a/2} \sqrt{\frac{\pi}{p}} \text{ V. T. 273, N. 4.}$$

$$21) \int e^{-p \cos^2 x} l Tg x \frac{q \sin^2 x - p \cos^2 x}{\sin^2 x \cdot Tg^{2a-1} x} dx = \frac{1}{4 p^a} 1^{a-1/2} \text{ V. T. 273, N. 3.}$$

$$22) \int e^{-q (Tg^2 x + \cos^2 x)} l Tg x \frac{(2a+1) \sin 2x - 2q \cos 2x}{Tg^{2a+1} x \cdot \sin^2 2x} dx = -\frac{1}{32} e^{-2q} \sqrt{\frac{\pi}{q}}.$$

$$\sum_{n=0}^{a+1} \frac{1}{(2q)^n} \frac{(a-n+1)^{2n/2}}{2^n 1^{n/2}} \text{ V. T. 273, N. 6.}$$

$$23) \int e^{-q \cos x} l Tg x \frac{p \sin x - q \cos x}{\sin 2x \cdot \sin x \cdot Tg^p x} dx = -\frac{1}{2 q^p} \Gamma(p) \text{ V. T. 273, N. 2.}$$

$$24) \int e^{-q Tg x} l Tg x \frac{dx}{\cos x \sqrt{\sin 2x}} = -(4q+A) \sqrt{\frac{\pi}{2q}} \text{ V. T. 357, N. 5.}$$

F. Exponent. monôme;
 Logarithmique;
 Circulaire Directe fract.

TABLE 469, suite.

Lim. 0 et $\frac{\pi}{2}$.

$$25) \int e^{-p T_0 x} l(q \cos x) \frac{pq l(q \cos x) + 2 \cos^2 x}{\cos^3 x} dx = -\frac{q}{4} (lq)^2 \text{ V. T. 354, N. 8.}$$

$$26) \int e^{-p T_0 x} l\left(\frac{q^2 \cos 2x}{\cos^3 x}\right) \frac{pq \cos 2x \cdot l(q^2 \cos 2x \cdot \sec^2 x) - 4 \cos^2 x}{\cos 2x \cdot \cos^3 x} dx = q (lq)^2 \text{ V. T. 354, N. 9.}$$

F. Exponent. binôme;

Logarithmique;

TABLE 470.

Lim. 0 et $\frac{\pi}{2}$.

Circulaire Directe fract.

$$1) \int \frac{l \cos x}{(e^{i T_0 x} - e^{-i T_0 x})^2} \frac{dx}{\cos^2 x} = \frac{1}{8\pi} (1 - 2A) \text{ V. T. 274, N. 7.}$$

$$2) \int \frac{l \cos x}{(e^{i T_0 x} - 1)^2} e^{q T_0 x} \frac{dx}{\cos^3 x} = \frac{1}{2q} \left\{ l \frac{2\pi}{q} - \frac{\pi}{q} + Z' \left(\frac{q + 2\pi}{2\pi} \right) \right\} \text{ V. T. 274, N. 8.}$$

$$3) \int \frac{e^{\frac{1}{2} i \pi T_0 x} + e^{-\frac{1}{2} i \pi T_0 x}}{(e^{\frac{1}{2} i \pi T_0 x} - e^{-\frac{1}{2} i \pi T_0 x})^2} \frac{l \cos x}{\cos^2 x} dx = \frac{1}{2\pi} (2 - \pi) \text{ V. T. 274, N. 5.}$$

$$4) \int \frac{e^{\frac{1}{2} i \pi T_0 x} + e^{-\frac{1}{2} i \pi T_0 x}}{(e^{\frac{1}{2} i \pi T_0 x} - e^{-\frac{1}{2} i \pi T_0 x})^2} \frac{l \cos x}{\cos^2 x} dx = \frac{4}{\pi} \left\{ 1 - \frac{\pi}{2\sqrt{2}} + \frac{1}{2\sqrt{2}} l \frac{\sqrt{2}-1}{\sqrt{2}+1} \right\} \text{ V. T. 274, N. 4.}$$

F. Exponentielle;

Logarithmique;

TABLE 471.

Lim. diverses.

Circulaire Directe.

$$1) \int_0^{\frac{1}{2}\pi} e^{-2ax \cos x} l(2 \cos x - 1) \frac{dx}{\sin 2x} = \frac{1}{4} \{ Li'(e^{-a}) \}^2 \text{ V. T. 359, N. 1.}$$

$$2) \int_0^1 e^{2ax \cos x} l(\sin \pi x) \cdot dx = -\frac{1}{2a} \text{ (IV, 564).}$$

$$3) \int_0^{\frac{1}{2}\pi} e^{p \cos x} l\left(\frac{1}{2} \sin x\right) \cdot \cos(p \sin x + x) dx = -\frac{\pi}{4p} (e^{\frac{1}{2}p} - e^{-\frac{1}{2}p})^2 \text{ V. T. 468, N. 3, 4.}$$

$$4) \int_{-\frac{1}{2}\pi}^{\frac{1}{2}\pi} (e^{p x} + e^{-p x}) \sin(pl \cos x) dx = -2\pi \sin(pl/2) \text{ V. T. 485, N. 14.}$$

$$5) \int_{-\frac{1}{2}\pi}^{\frac{1}{2}\pi} (e^{p x} + e^{-p x}) \cos(pl \cos x) dx = 2\pi \cos(pl/2) \text{ V. T. 485, N. 15.}$$

$$6) \int_{-\frac{1}{2}\pi}^{\frac{1}{2}\pi} e^{2x \cos x - p e^{2x \cos x}} l(\cos x) \cdot dx = \frac{\pi}{2} \frac{e^p - 1}{p} \text{ V. T. 468, N. 4.}$$

F. Exponentielle;
Logarithmique;
Circulaire Directe.

TABLE 471, suite.

Lim. diverses.

$$7) \int_{-\frac{1}{2}\pi}^{\frac{1}{2}\pi} e^{-p \cos x} l(\cos x) \cdot \cos(p \sin 2x - 2x) dx = \frac{\pi}{2p} (e^p - 1) \text{ V. T. 468, N. 4.}$$

$$8) \int_{-\infty}^{\infty} \left\{ \frac{l \left\{ 1 - \frac{2q}{e^{p(x-r)}} - e^{-p(x-r)} \right\}}{i \sin \{ \pi(x-r) \}} - \frac{l \left\{ 1 - \frac{2q}{e^{p(x+r)}} - e^{-p(x+r)} \right\}}{i \sin \{ \pi(x+r) \}} \right\} dx = \frac{2}{\pi} \left\{ l \frac{q\pi}{2p} - \right. \\ \left. - l Tg \left[\frac{\pi}{2p} l \{ q + \sqrt{1+q^2} \} \right] + \sum_{n=1}^{\infty} (-1)^n l \left(1 + \frac{2q}{e^{pn}} - e^{-pn} \right) \right\} [pr < \pi]$$

Cauchy, C. R. 1846. 562.

F. Exponentielle;
Circulaire Directe;
Circulaire Inverse.

TABLE 472.

Lim. diverses.

$$1) \int_0^1 \text{Arctg}(e^{-x}) \cdot \sin px dx = \frac{\pi}{4p} \frac{(e^{p\pi} - 1)^2}{e^{p\pi} + 1} \text{ V. T. 264, N. 14.}$$

$$2) \int_0^1 \sin \left[\lambda + \text{Arctg} \left\{ Tg(x \cos \lambda) \frac{e^{2x \sin \lambda} - 1}{e^{2x \sin \lambda} + 1} \right\} \right] \sqrt{e^{2x \sin \lambda} + e^{-2x \sin \lambda} + 2 \cos(2x \cos \lambda)} dx = \\ = (e^{-\sin \lambda} - e^{\sin \lambda}) \cos(\cos \lambda) \text{ (VIII, 629).}$$

$$3) \int_0^1 \cos \left[\lambda + \text{Arctg} \left\{ Tg(x \cos \lambda) \frac{e^{2x \sin \lambda} - 1}{e^{2x \sin \lambda} + 1} \right\} \right] \sqrt{e^{2x \sin \lambda} + e^{-2x \sin \lambda} + 2 \cos(2x \cos \lambda)} dx = \\ = (e^{\sin \lambda} + e^{-\sin \lambda}) \sin(\cos \lambda) \text{ (VIII, 629).}$$

$$4) \int_0^1 \sin \left[\lambda + \cos \lambda + \text{Arctg} \left\{ Tg(x \cos \lambda) \frac{e^{2x \sin \lambda} - 1}{e^{2x \sin \lambda} + 1} \right\} \right] \sqrt{e^{2x \sin \lambda} + e^{-2x \sin \lambda} + 2 \cos(2x \cos \lambda)} dx = \\ = e^{-\sin \lambda} - e^{\sin \lambda} \cos(2 \cos \lambda) \text{ V. T. 472, N. 2, 3.}$$

$$5) \int_0^1 \cos \left[\lambda + \cos \lambda + \text{Arctg} \left\{ Tg(x \cos \lambda) \frac{e^{2x \sin \lambda} - 1}{e^{2x \sin \lambda} + 1} \right\} \right] \sqrt{e^{2x \sin \lambda} + e^{-2x \sin \lambda} + 2 \cos(2x \cos \lambda)} dx = \\ = e^{\sin \lambda} \sin(2 \cos \lambda) \text{ V. T. 472, N. 2, 3.}$$

$$6) \int_0^1 \sin \left[\lambda - \cos \lambda + \text{Arctg} \left\{ Tg(x \cos \lambda) \frac{e^{2x \sin \lambda} - 1}{e^{2x \sin \lambda} + 1} \right\} \right] \sqrt{e^{2x \sin \lambda} + e^{-2x \sin \lambda} + 2 \cos(2x \cos \lambda)} dx = \\ = e^{-\sin \lambda} \cos(2 \cos \lambda) - e^{\sin \lambda} \text{ V. T. 472, N. 2, 3.}$$

$$7) \int_0^1 \cos \left[\lambda - \cos \lambda + \text{Arctg} \left\{ Tg(x \cos \lambda) \frac{e^{2x \sin \lambda} - 1}{e^{2x \sin \lambda} + 1} \right\} \right] \sqrt{e^{2x \sin \lambda} + e^{-2x \sin \lambda} + 2 \cos(2x \cos \lambda)} dx = \\ = e^{-\sin \lambda} \sin(2 \cos \lambda) \text{ V. T. 472, N. 2, 3.}$$

F. Exponentielle;

Circulaire Directe;

TABLE 472, suite.

Lim. diverses.

Circulaire Inverse.

$$8) \int_0^1 \operatorname{Arctg}(e^x) \cdot \sin px \, dx = \frac{\pi}{4p} \frac{(e^{\frac{1}{2}p\pi} + 1)^2}{e^{p\pi} + 1} \text{ V. T. 264, N. 14.}$$

$$9) \int_0^\infty \operatorname{Arctg}\left(\frac{\sin qx}{e^{px} - \cos qx}\right) \cdot dx = \frac{q\pi^2}{8(p^2 + q^2)} \quad 10) \int_0^\infty \operatorname{Arctg}\left(\frac{\sin qx}{e^{px} + \cos qx}\right) \cdot dx = \frac{q\pi^2}{12(p^2 + q^2)}$$

$$11) \int_0^\infty \operatorname{Arctg}\left(\frac{2pe^x \cos x}{e^{2x} - p^2}\right) \cdot dx = \frac{\pi}{4} \ell \frac{1+p}{1-p} \text{ Sur 9) à 11) v. Bronwin Mathem. 1, 197.}$$

F. Exponentielle;

Circulaire Directe;

TABLE 473.

Lim. diverses.

Autre Fonction.

$$1) \int_0^\infty \operatorname{li}(e^{-x}) \cdot \sin qx \, dx = -\frac{1}{2q} \ell(1 + q^2) \text{ V. T. 473, N. 7.}$$

$$2) \int_0^\infty \operatorname{li}(e^{-x}) \cdot \cos qx \, dx = -\frac{1}{q} \operatorname{Arctg} q \text{ V. T. 473, N. 8.}$$

$$3) \int_0^\infty \operatorname{li}(e^{-x}) \cdot e^x \sin qx \, dx = \frac{-1}{1+q^2} \left(\frac{\pi}{2} + q \ell q \right) \text{ (VIII, 459).}$$

$$4) \int_0^\infty \operatorname{li}(e^x) \cdot e^{-x} \sin qx \, dx = \frac{1}{1+q^2} \left(\frac{\pi}{2} - q \ell q \right) \text{ (VIII, 459).}$$

$$5) \int_0^\infty \operatorname{li}(e^{-x}) \cdot e^x \cos qx \, dx = \frac{1}{1+q^2} \left(\ell q - \frac{1}{2} q \pi \right) \text{ (VIII, 459).}$$

$$6) \int_0^\infty \operatorname{li}(e^x) \cdot e^{-x} \cos qx \, dx = \frac{-1}{1+q^2} \left(\frac{1}{2} q \pi + \ell q \right) \text{ (VIII, 459).}$$

$$7) \int_0^\infty \operatorname{li}(e^{-x}) \cdot e^{-px} \sin qx \, dx = \frac{-1}{p^2 + q^2} \left\{ \frac{q}{2} \ell \{ (1+p)^2 + q^2 \} - p \operatorname{Arctg} \left(\frac{q}{1+p} \right) \right\} \text{ V. T. 283, N. 4.}$$

$$8) \int_0^\infty \operatorname{li}(e^{-x}) \cdot e^{-px} \cos qx \, dx = \frac{-1}{p^2 + q^2} \left\{ \frac{p}{2} \ell \{ (1+p)^2 + q^2 \} + q \operatorname{Arctg} \left(\frac{q}{1+p} \right) \right\} \text{ V. T. 283, N. 4.}$$

$$9) \int_0^{\frac{1}{2}\pi} \operatorname{li}(e^{-\tau q x}) \cdot Tg^p x \cdot \frac{dx}{\sin 2x} = -\frac{1}{2p} \Gamma(p) \text{ V. T. 400, N. 3.}$$

$$1) \int_0^{\pi} \operatorname{Arctg} \frac{p}{x} \cdot \left\{ \cos^2 x \cdot l(1 + q^2 \operatorname{Tg}^2 x) + \frac{2q^2}{\cos^2 x + q^2 \sin^2 x} \right\} \frac{\sin x dx}{\cos^2 x} = \frac{2\pi}{e^p + e^{-p}} l \left\{ 1 + q \frac{e^p - e^{-p}}{e^p + e^{-p}} \right\} \quad (\text{VIII, 420}).$$

$$2) \int_0^{\frac{\pi}{2}} l \operatorname{Tg} x \cdot \cos x \cdot \operatorname{Arctg}(p \cos x) \cdot dx = \frac{p^2 \pi}{2(p^2 - 1)} lp - \frac{\pi}{2} l \{p + \sqrt{1 + p^2}\} \quad \text{V. T. 317, N. 15 et T. 342, N. 2.}$$

$$3) \int_0^{\frac{\pi}{2}} l \operatorname{Tg} x \cdot \sin x \cdot \operatorname{Arctg}(p \sin x) \cdot dx = \frac{\pi}{2} l \{p + \sqrt{1 + p^2}\} - \frac{p^2 \pi}{2(p^2 - 1)} lp \quad \text{V. T. 317, N. 16 et T. 342, N. 1.}$$

$$4) \int_0^{\frac{\pi}{2}} \left\{ \sin x \cdot l(1 + 2p \cos x + p^2) + 2 \cos x \cdot \operatorname{Arctg} \left(\frac{p \sin x}{1 + p \cos x} \right) \right\} dx = 2 \frac{1+p}{p} l(1+p) - \frac{1}{p} l(1+p^2) - 2(1 - \operatorname{Arctg} p) \quad (\text{VIII, 630}).$$

$$5) \int_0^{\frac{\pi}{2}} \left\{ \cos x \cdot l(1 + 2p \cos x + p^2) - 2 \sin x \cdot \operatorname{Arctg} \left(\frac{p \sin x}{1 + p \cos x} \right) \right\} dx = l(1+p^2) + \frac{2}{p} \operatorname{Arctg} p - 2 \quad (\text{VIII, 630}).$$

$$6) \int_0^{\pi} \left\{ \sin x \cdot l(1 + 2p \cos x + p^2) + 2 \cos x \cdot \operatorname{Arctg} \left(\frac{p \sin x}{1 + p \cos x} \right) \right\} dx = \frac{2}{p} l \frac{1+p}{1-p} + 2l(1-p^2) - 4[p^2 < 1] \quad (\text{VIII, 630}).$$

$$7) \int_0^{\pi} \left\{ \cos x \cdot l(1 + 2p \cos x + p^2) - 2 \sin x \cdot \operatorname{Arctg} \left(\frac{p \sin x}{1 + p \cos x} \right) \right\} dx = 0[p^2 < 1] \quad (\text{VIII, 630}).$$

$$1) \int_0^1 li \left(\frac{1}{x} \right) \cdot \sin(q l x) dx = \frac{1}{1+q^2} \left(q l q - \frac{1}{2} \pi \right) \quad \text{V. T. 473, N. 4.}$$

$$2) \int_0^1 li \left(\frac{1}{x} \right) \cdot \cos(q l x) dx = \frac{-1}{1+q^2} \left(l q + \frac{1}{2} q \pi \right) \quad \text{V. T. 473, N. 6.}$$

$$3) \int_0^1 l \Gamma(x) \cdot \sin 2 a \pi x dx = \frac{1}{2 a \pi} (A + l 2 a \pi) \quad (\text{VIII, 458}).$$

$$4) \int_0^1 l \Gamma(x) \cdot \cos 2 a \pi x dx = \frac{1}{4 a} \quad (\text{VIII, 271}).$$

$$5) \int_0^1 l \Gamma(1-x) \cdot \sin 2 a \pi x dx = \frac{-1}{2 a \pi} (l 2 a \pi + A) \quad (\text{VIII, 458}).$$

$$6) \int_0^1 l \Gamma(1-x) \cdot \cos 2 a \pi x dx = \frac{1}{4 a} \quad (\text{VIII, 271}).$$

$$7) \int_0^{\infty} \operatorname{Li}\left(\frac{1}{x}\right) \cdot \sin(q \log x) dx = -\frac{\pi}{1+q^2} \quad \text{V. T. 475, N. 1, 9.}$$

$$8) \int_0^{\infty} \operatorname{Li}\left(\frac{1}{x}\right) \cdot \cos(q \log x) dx = -\frac{q\pi}{1+q^2} \quad \text{V. T. 475, N. 2, 10.}$$

$$9) \int_1^{\infty} \operatorname{Li}\left(\frac{1}{x}\right) \cdot \sin(q \log x) dx = -\frac{1}{1+q^2} \left\{ \frac{\pi}{2} + q \log q \right\} \quad \text{V. T. 473, N. 3.}$$

$$10) \int_1^{\infty} \operatorname{Li}\left(\frac{1}{x}\right) \cdot \cos(q \log x) dx = \frac{1}{1+q^2} \left(\log q - \frac{1}{2} q\pi \right) \quad \text{V. T. 473, N. 5.}$$

$$11) \int_0^{\frac{\pi}{2}} \log \left[\sin \cdot \operatorname{Amp} \left\{ \frac{2x}{\pi} F'(p) \right\} \right] dx = -\frac{\pi}{4} \left\{ \log p + \frac{\pi}{2} \frac{F' \{ \sqrt{1-p^2} \}}{F'(p)} \right\} \quad (\text{IV, 567}).$$

$$12) \int_0^{\frac{\pi}{2}} \log \left[\cos \cdot \operatorname{Amp} \left\{ \frac{2x}{\pi} F'(p) \right\} \right] dx = \frac{\pi}{4} \left\{ \log \frac{\sqrt{1-p^2}}{p} - \frac{\pi}{2} \frac{F' \{ \sqrt{1-p^2} \}}{F'(p)} \right\} \quad (\text{IV, 567}).$$

$$1) \int F \left\{ p, \operatorname{Arctg} \left(\frac{Tg^{\alpha} x \cdot Tg^{\beta} \cdot \cot^2 x}{\sqrt{1-p^2}} \right) \right\} \frac{dx}{\sqrt{(\sin^2 x - \sin^2 \alpha)(\sin^2 \beta - \sin^2 x)}} =$$

$$= \frac{1}{2 \cos \alpha \cdot \sin \beta} F'(p) \cdot F' \{ \sqrt{1 - Tg^2 \alpha \cdot \cot^2 \beta} \} \quad (\text{VIII, 425}).$$

$$2) \int F \left\{ p, \operatorname{Arctg} \left(\frac{\cot^2 \alpha \cdot \cot^2 \beta \cdot Tg^2 x}{\sqrt{1-p^2}} \right) \right\} \frac{dx}{\sqrt{(\sin^2 x - \sin^2 \alpha)(\sin^2 \beta - \sin^2 x)}} =$$

$$= \frac{1}{2 \cos \alpha \cdot \sin \beta} F'(p) \cdot F' \{ \sqrt{1 - Tg^2 \alpha \cdot \cot^2 \beta} \} \quad (\text{VIII, 425}).$$

$$3) \int F \left\{ \sqrt{1 - \cot^2 \alpha \cdot \cot^2 \beta}, \operatorname{Arctg}(Tg \alpha \cdot Tg \beta \cdot \cot x) \right\} \frac{dx}{\sqrt{(\sin^2 x - \sin^2 \alpha)(\sin^2 \beta - \sin^2 x)}} = \frac{1}{2 \cos \alpha \cdot \sin \beta}$$

$$F' \{ \sqrt{1 - \cot^2 \alpha \cot^2 \beta} \} \cdot F' \{ \sqrt{1 - Tg^2 \alpha \cdot \cot^2 \beta} \} \quad (\text{VIII, 425}).$$

$$4) \int E \left\{ \sqrt{1 - \cot^2 \alpha \cdot \cot^2 \beta}, \operatorname{Arctg}(Tg \alpha \cdot Tg \beta \cdot \cot x) \right\} \frac{dx}{\sqrt{(\sin^2 x - \sin^2 \alpha)(\sin^2 \beta - \sin^2 x)}} =$$

$$\frac{1}{2 \cos \alpha \cdot \sin \beta} E' \{ \sqrt{1 - \cot^2 \alpha \cdot \cot^2 \beta} \} \cdot F' \{ \sqrt{1 - Tg^2 \alpha \cdot \cot^2 \beta} \} + \frac{\sin \beta}{2 \cos \alpha} (1 - \cot^2 \alpha \cdot \cot^2 \beta)$$

$$F' \{ \sqrt{1 - \sin^2 2 \beta \cdot \operatorname{Cosec}^2 2 \alpha} \} \quad (\text{VIII, 427}).$$

PARTIE CINQUIÈME



PARTIE CINQUIÈME.

F. Alg. rat. entière;

Logarithmique;

Circulaire Directe;

Une autre fonction.

TABLE 477.

Lim. diverses.

$$1) \int_0^1 li(x) \cdot \sin(q lx) \cdot x^{p-1} dx = \frac{1}{p^2 + q^2} \left\{ \frac{q}{2} l \{ (1+p)^2 + q^2 \} - p \operatorname{Arctg} \left(\frac{q}{1+p} \right) \right\} \quad \text{V. T. 473, N. 7.}$$

$$2) \int_0^1 li(x) \cdot \cos(q lx) \cdot x^{p-1} dx = \frac{-1}{p^2 + q^2} \left\{ q \operatorname{Arctg} \left(\frac{q}{1+p} \right) + \frac{p}{2} l \{ (1+p)^2 + q^2 \} \right\} \\ \text{V. T. 473, N. 8.}$$

$$3) \int_0^1 \sin(p \operatorname{Arccos} x) \cdot lx \cdot x^{p-1} dx = \frac{\pi}{2^{p+1}} \left\{ A + Z'(p) - \frac{1}{p} - 2 l 2 \right\} \quad \text{V. T. 306, N. 12.}$$

$$4) \int_0^\infty e^{-qx} \sin rx \cdot lx \cdot x^{p-1} dx = \frac{\Gamma(p)}{\sqrt{q^2 + r^2}^p} \left\{ \operatorname{Arctg} \frac{r}{q} \cdot \cos \left(p \operatorname{Arctg} \frac{r}{q} \right) - \frac{1}{2} l (q^2 + r^2) \cdot \right. \\ \left. \sin \left(p \operatorname{Arctg} \frac{r}{q} \right) + \sin \left(p \operatorname{Arctg} \frac{r}{q} \right) \cdot Z'(p) \right\} \quad (\text{IV, 568}).$$

$$5) \int_0^\infty e^{-qx} \cos rx \cdot lx \cdot x^{p-1} dx = \frac{\Gamma(p)}{\sqrt{q^2 + r^2}^p} \left\{ \cos \left(p \operatorname{Arctg} \frac{r}{q} \right) \cdot Z'(p) - \frac{1}{2} l (q^2 + r^2) \cdot \cos \left(p \operatorname{Arctg} \frac{r}{q} \right) - \right. \\ \left. - \operatorname{Arctg} \frac{r}{q} \cdot \sin \left(p \operatorname{Arctg} \frac{r}{q} \right) \right\} \quad (\text{IV, 568}).$$

$$6) \int_0^\infty e^{-qx} \cos rx \cdot lx \cdot (qx \operatorname{Tgr} x - rx - p \operatorname{Tgr} x) x^{p-1} dx = \frac{\Gamma(p)}{(q^2 + r^2)^{\frac{1}{2}p}} \cdot \sin \left(p \operatorname{Arctg} \frac{r}{q} \right) \\ \text{V. T. 361, N. 9.}$$

$$7) \int_0^\infty e^{-qx} \cos rx \cdot lx \cdot (qx - rx \operatorname{Tgr} x - p) x^{p-1} dx = \frac{\Gamma(p)}{(q^2 + r^2)^{\frac{1}{2}p}} \cos \left(p \operatorname{Arctg} \frac{r}{q} \right) \quad \text{V. T. 361, N. 10.}$$

$$8) \int_0^\infty e^{-px} \sin \left(qx - \operatorname{Arctg} \frac{q}{p} \right) \cdot lx \cdot dx = \frac{1}{\sqrt{p^2 + q^2}} \operatorname{Arctg} \frac{q}{p} \quad \text{V. T. 467, N. 1, 2.}$$

F. Alg. rat. entière;

Logarithmique;

Circulaire Directe;

Une autre fonction.

TABLE 477, suite.

Lim. diverses.

$$9) \int_0^{\infty} e^{-px} \cos\left(qx - \operatorname{Arctg} \frac{p}{q}\right) \cdot lx \cdot dx = \frac{-1}{\sqrt{p^2 + q^2}} \left\{ A + \frac{1}{2} l(p^2 + q^2) \right\} \quad \text{V. T. 467, N. 1, 2.}$$

$$10) \int_0^{\infty} e^{-rx} \sin\left(qx - p \operatorname{Arctg} \frac{q}{r}\right) \cdot lx \cdot x^{p-1} dx = \frac{\Gamma(p)}{(q^2 + r^2)^{\frac{1}{2}p}} \operatorname{Arctg} \frac{q}{r} \quad \text{V. T. 477, N. 4, 5.}$$

$$11) \int_0^{\infty} e^{-rx} \cos\left(qx - p \operatorname{Arctg} \frac{q}{r}\right) \cdot lx \cdot x^{p-1} dx = \frac{\Gamma(p)}{(q^2 + r^2)^{\frac{1}{2}p}} \left\{ Z'(p) - \frac{1}{2} l(q^2 + r^2) \right\} \\ \text{V. T. 477, N. 4, 5.}$$

$$12) \int_0^{\frac{1}{2}} lx \cdot \sin(\operatorname{Arccos} qx) \cdot x^{p-1} dx = \frac{\pi}{2^{p+1} q^p} \left\{ A + Z'(q) - \frac{1}{q} - 2l(2q) \right\} \quad (\text{IV, 569}).$$

F. Alg. rat. entière;

Exponentielle;

Deux autres fonctions.

TABLE 478.

Lim. 0 et ∞ .

$$1) \int e^{-qx} (1 - 2e^{-qx} \cos sx + e^{-2qx})^{\frac{1}{2}a} \sin \left\{ sr x + a \operatorname{Arctg} \left(\frac{e^{-qx} \sin sx}{e^{-qx} \cos sx - 1} \right) \right\} \cdot x^{p-1} dx = \\ = \frac{\Gamma(p)}{(s^2 + r^2)^{\frac{1}{2}a}} \sin \left(p \operatorname{Arctg} \frac{s}{q} \right) \cdot \Delta^a \cdot r^{-p} \quad (\text{IV, 569}).$$

$$2) \int e^{-qx} (1 - 2e^{-qx} \cos sx + e^{-2qx})^{\frac{1}{2}a} \cos \left\{ sr x + a \operatorname{Arctg} \left(\frac{e^{-qx} \sin sx}{e^{-qx} \cos sx - 1} \right) \right\} \cdot x^{p-1} dx = \\ = \frac{\Gamma(p)}{(s^2 + r^2)^{\frac{1}{2}a}} \cos \left(p \operatorname{Arctg} \frac{s}{q} \right) \cdot \Delta^a \cdot r^{-p} \quad (\text{IV, 569}).$$

$$3) \int e^{-qx} \{ lx + Z'(p) \} x^{p-1} dx = -\Gamma(p) \frac{lq}{q^p} \quad (\text{IV, 569}).$$

$$4) \int e^{-qx} (e^{-x} - 1)^a \{ lx + Z'(p) \} x^{p-1} dx = -\Gamma(p) \cdot \Delta^a \cdot \frac{lq}{q^p} \quad (\text{IV, 569}).$$

F. Alg. rat. fract. à dén. monôme;

Logarithmique;

Circulaire Directe;

Une autre fonction.

TABLE 479.

Lim. diverses.

$$1) \int_0^1 li(x) \cdot \sin(qlx) \frac{dx}{x} = \frac{1}{2q} l(1 + q^2) \quad \text{V. T. 473, N. 1.}$$

$$2) \int_0^1 li(x) \cdot \cos(qlx) \frac{dx}{x} = -\frac{1}{q} \operatorname{Arctg} q \quad \text{V. T. 473, N. 2.}$$

F. Alg. rat. fract. à dén. monôme;

Logarithmique;

Circulaire Directe;

Une autre fonction.

TABLE 479, suite.

Lim. diverses.

$$3) \int_0^1 li(x) \cdot \sin(qlx) \frac{dx}{x^2} = \frac{1}{1+q^2} \left(qlq + \frac{1}{2}\pi \right) \text{ V. T. 473, N. 3.}$$

$$4) \int_0^1 li(x) \cdot \cos(qlx) \frac{dx}{x^2} = \frac{1}{1+q^2} \left(lq - \frac{1}{2}q\pi \right) \text{ V. T. 473, N. 5.}$$

$$5) \int_0^\infty \text{Arctg } x \cdot \sin(plx) \frac{dx}{x} = -\frac{\pi}{4p} \frac{(e^{\frac{1}{2}p\pi} - 1)^2}{e^{p\pi} + 1} \text{ V. T. 402, N. 6.}$$

$$6) \int_0^\infty lx \cdot e^{-px} \sin qx \frac{dx}{x} = -\left\{ \Lambda + \frac{1}{2}l(p^2 + q^2) \right\} \cdot \text{Arctg } \frac{q}{p} \text{ Schlömilch, Schl. Z. 7, 262.}$$

$$7) \int_0^\infty l \frac{e^x + 2p \sin x + p^2 e^{-x}}{e^x - 2p \sin x + p^2 e^{-x}} \frac{dx}{x} = \pi \text{ Arctg } p \text{ Bronwin, Mathem. 1, 197.}$$

$$8) \int_0^\infty li(x) \cdot \sin(qlx) \frac{dx}{x^2} = \frac{\pi}{1+q^2} \text{ V. T. 479, N. 3, 13.}$$

$$9) \int_0^\infty li(x) \cdot \cos(qlx) \frac{dx}{x^2} = -\frac{q\pi}{1+q^2} \text{ V. T. 479, N. 4, 14.}$$

$$10) \int_0^\infty e^{-px} (e^{-x} - 1)^a \frac{lx + Z'(q)}{x^{q+1}} dx = \frac{\pi}{\Gamma(q+1) \sin q\pi} \Delta^a \cdot (p^q lp) [q < a] \text{ V. T. 478, N. 4.}$$

$$11) \int_0^\infty e^{-px} (e^{-x} - 1)^a \frac{lx - Z'(q+1) - \pi \cot \{(q+1)\pi\}}{x^{q+1}} dx = -\frac{\pi}{\Gamma(q+1)} \text{Cosec} \{(q+1)\pi\}.$$

$$\Delta^a \cdot (p^q lp) [q < a], = -\frac{\pi}{\Gamma(q+1)} \text{Cosec} \{(q+1)\pi\} \cdot \Delta^a \cdot (p^a lp) [q > a] \text{ (IV, 571).}$$

$$12) \int_0^\infty (lx)^2 \cdot e^{-px} (p \sin qx - q \cos qx) dx = -\{2\Lambda + l(p^2 + q^2)\} \text{Arctg } \frac{q}{p} \text{ V. T. 479, N. 6.}$$

$$13) \int_1^\infty li(x) \cdot \sin(qlx) \frac{dx}{x^2} = \frac{1}{1+q^2} \left\{ \frac{\pi}{2} - qlq \right\} \text{ V. T. 473, N. 4.}$$

$$14) \int_1^\infty li(x) \cdot \cos(qlx) \frac{dx}{x^2} = \frac{-1}{1+q^2} \left\{ lq + \frac{1}{2}q\pi \right\} \text{ V. T. 473, N. 6.}$$

F. Alg. rat. fract. à dén. bin. $q^2 + x^2$;

Exponentielle;

Circulaire Directe à un facteur;

Une autre fonction.

TABLE 480.

Lim. 0 et ∞ .

$$1) \int e^{s \cos r x} Si(x) \cdot \sin(s \sin r x) \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} \{Li(q) - Li(-q)\} (e^{s \cos r} - 1) \text{ (VIII, 649).}$$

$$2) \int e^{s \cos r x} Si(x) \cdot \cos(s \sin r x) \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} \{Li(-q) - Li(q)\} e^{s \cos r} \text{ (VIII, 649).}$$

F. Alg. rat. fract. à dén. bin. $q^2 + x^2$;

Exponentielle;

Circulaire Directe à un facteur;

Une autre fonction.

TABLE 480, suite.

Lim. 0. et ∞ .

$$3) \int e^{s \cos r x} Ci(x) \cdot \sin(s \sin r x) \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} Ei(-q) \cdot (e^{s e^{-q r}} - e^{s e^{q r}}) \text{ (VIII, 649).}$$

$$4) \int e^{s \cos r x} Ci(x) \cdot \cos(s \sin r x) \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} Ei(-q) \cdot (e^{s e^{q r}} + e^{s e^{-q r}}) \text{ (VIII, 649).}$$

$$5) \int e^{s \cos r x + s_1 \cos r_1 x + \dots} Si(x) \cdot \sin\{(sr + s_1 r_1 + \dots)x\} \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} \{Ei(q) - Ei(-q)\} \\ \{e^{s e^{-q r} + s_1 e^{-q r_1} + \dots} - 1\} \text{ (VIII, 650).}$$

$$6) \int e^{s \cos r x + s_1 \cos r_1 x + \dots} Si(x) \cdot \cos\{(sr + s_1 r_1 + \dots)x\} \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} \{Ei(-q) - Ei(q)\} \\ e^{s e^{-q r} + s_1 e^{-q r_1} + \dots} \text{ (VIII, 650).}$$

$$7) \int e^{s \cos r x + s_1 \cos r_1 x + \dots} Ci(x) \cdot \sin\{(sr + s_1 r_1 + \dots)x\} \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} Ei(-q) \cdot \\ \{e^{s e^{-q r} + s_1 e^{-q r_1} + \dots} - e^{s e^{q r} + s_1 e^{q r_1} + \dots}\} \text{ (VIII, 650).}$$

$$8) \int e^{s \cos r x + s_1 \cos r_1 x + \dots} Ci(x) \cdot \cos\{(sr + s_1 r_1 + \dots)x\} \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} Ei(-q) \\ \{e^{s e^{q r} + s_1 e^{q r_1} + \dots} + e^{s e^{-q r} + s_1 e^{-q r_1} + \dots}\} \text{ (VIII, 650).}$$

$$9) \int e^{s \cos r x} Si(x) \cdot \sin(s \sin r x + r x) \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} \{Ei(q) - Ei(-q)\} e^{s e^{-q r} - q r} \text{ (VIII, 650).}$$

$$10) \int e^{s \cos r x} Si(x) \cdot \cos(s \sin r x + r x) \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} \{Ei(-q) - Ei(q)\} e^{s e^{-q r} - q r} \text{ (VIII, 650).}$$

$$11) \int e^{s \cos r x} Ci(x) \cdot \sin(s \sin r x + r x) \frac{x dx}{q^2 + x^2} = \frac{\pi}{4} Ei(-q) \cdot \{e^{s e^{-q r} - q r} - e^{s e^{q r} + q r}\} \text{ (VIII, 650).}$$

$$12) \int e^{s \cos r x} Ci(x) \cdot \cos(s \sin r x + r x) \frac{dx}{q^2 + x^2} = \frac{\pi}{4q} Ei(-q) \cdot \{e^{s e^{q r} + q r} + e^{s e^{-q r} - q r}\} \text{ (VIII, 650).}$$

$$13) \int e^{s \cos r x + s_1 \cos r_1 x + \dots} Si(x) \cdot \sin(s \sin r x + s_1 \sin r_1 x + \dots + p x) \frac{dx}{q^2 + x^2} = \\ = \frac{\pi}{4q} \{Ei(q) - Ei(-q)\} (e^{s e^{-q r} + s_1 e^{-q r_1} + \dots - p q} - e^{s + s_1 + \dots}) \text{ (II, 60).}$$

$$14) \int e^{s \cos r x + s_1 \cos r_1 x + \dots} Si(x) \cdot \cos(s \sin r x + s_1 \sin r_1 x + \dots + p x) \frac{x dx}{q^2 + x^2} = \\ = \frac{\pi}{4} \{Ei(-q) - Ei(q)\} e^{s e^{-q r} + s_1 e^{-q r_1} + \dots - p q} \text{ (II, 61).}$$

F. Alg. rat. fract. à dén. bin. $q^2 + x^2$;

Exponentielle;

Circulaire Directe à un facteur;

Une autre fonction.

TABLE 480, suite.

Lim. 0 et ∞ .

$$15) \int e^{s \cos r x + s_1 \cos r_1 x + \dots} \text{Ci}(x) \cdot \sin(s \sin r x + s_1 \sin r_1 x + \dots + p x) \frac{x dx}{q^2 + x^2} = \\ = \frac{\pi}{4} \text{Ei}(-q) \cdot (e^{s e^{-qr} + s_1 e^{-qr_1} + \dots - qp} - e^{s e^{qr} + s_1 e^{qr_1} + \dots + qp}) \quad (\text{H}, 69).$$

$$16) \int e^{s \cos r x + s_1 \cos r_1 x + \dots} \text{Ci}(x) \cdot \cos(s \sin r x + s_1 \sin r_1 x + \dots + p x) \frac{dx}{q^2 + x^2} = \\ = \frac{\pi}{4q} \text{Ei}(-q) \cdot (e^{s e^{qr} + s_1 e^{qr_1} + \dots + qp} + e^{s e^{-qr} + s_1 e^{-qr_1} + \dots - qp}) \quad (\text{H}, 69).$$

F. Alg. rat. fract. à dén. bin. $q^2 + x^2$;

Exponentielle;

Circ. Directe à deux facteurs;

Une autre fonction.

TABLE 481.

Lim. 0 et ∞ .

$$1) \int e^{t \cos p x} \text{Si}(x) \cdot \cos^s r x \cdot \sin(sr x + t \sin p x) \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+2} q} \{ \text{Ei}(q) - \text{Ei}(-q) \} \\ \{ (1 + e^{-2qr})^s e^{t e^{-qp}} - 1 \} \quad (\text{VIII}, 651).$$

$$2) \int e^{t \cos p x} \text{Si}(x) \cdot \cos^s r x \cdot \cos(sr x + t \sin p x) \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+2}} \{ \text{Ei}(-q) - \text{Ei}(q) \} \\ (1 + e^{-2qr})^s e^{t e^{-qp}} \quad (\text{VIII}, 651).$$

$$3) \int e^{t \cos p x} \text{Ci}(x) \cdot \cos^s r x \cdot \sin(sr x + t \sin p x) \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+2}} \text{Ei}(-q) \cdot \{ e^{t e^{-qp} - sqr} - e^{t e^{qp} + sqr} \} \\ (e^{qr} + e^{-qr})^s \quad (\text{VIII}, 651).$$

$$4) \int e^{t \cos p x} \text{Ci}(x) \cdot \cos^s r x \cdot \cos(sr x + t \sin p x) \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+2} q} \text{Ei}(-q) \cdot (e^{t e^{qp} + sqr} + e^{t e^{-qp} - sqr}) \\ (e^{qr} + e^{-qr})^s \quad (\text{VIII}, 651).$$

$$5) \int e^{t \cos p x} \text{Si}(x) \cdot \cos^s r x \cdot \sin \{ (sr + p)x + t \sin p x \} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+2} q} \{ \text{Ei}(q) - \text{Ei}(-q) \} \\ (1 + e^{-2qr})^s e^{t e^{-qp} - qp} \quad (\text{VIII}, 652).$$

$$6) \int e^{t \cos p x} \text{Si}(x) \cdot \cos^s r x \cdot \cos \{ (sr + p)x + t \sin p x \} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+2}} \{ \text{Ei}(-q) - \text{Ei}(q) \} \\ (1 + e^{-2qr})^s e^{t e^{qp} - qp} \quad (\text{VIII}, 652).$$

F. Alg. rat. fract. à dén. bin. $q^2 + x^2$;

Exponentielle;

Circ. Directe à deux facteurs;

Une autre fonction.

TABLE 481, suite.

Lim. 0 et ∞ .

$$7) \int e^{t \cos p x} Ci(x) \cdot \cos^s r x \cdot \sin \{(sr+p)x + t \sin p x\} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+2}} Ei(-q).$$

$$(e^{t e^{-q p} - s q r - q p} - e^{t e^{q p} + s q r + q p})(e^{q r} + e^{-q r})^s \quad (\text{VIII, 652}).$$

$$8) \int e^{t \cos p x} Ci(x) \cdot \cos^s r x \cdot \cos \{(sr+p)x + t \sin p x\} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+2} q} Ei(-q).$$

$$(e^{t e^{q p} + s q r + q p} + e^{t e^{-q p} - s q r - q p})(e^{q r} + e^{-q r})^s \quad (\text{VIII, 652}).$$

$$9) \int e^{t \cos p x} Si(x) \cdot \sin^s r x \cdot \sin \left(\frac{1}{2} s \pi - s r x - t \sin p x \right) \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+2} q} \{Ei(-q) - Ei(q)\}$$

$$\{(1 - e^{-2 q r})^s e^{t e^{-q p}} - 1\} \quad (\text{VIII, 654}).$$

$$10) \int e^{t \cos p x} Si(x) \cdot \sin^s r x \cdot \cos \left(\frac{1}{2} s \pi - s r x - t \sin p x \right) \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+2}} \{Ei(-q) - Ei(q)\}$$

$$(1 - e^{-2 q r})^s e^{t e^{-q p}} \quad (\text{VIII, 654}).$$

$$11) \int e^{t \cos p x} Ci(x) \cdot \sin^s r x \cdot \sin \left(\frac{1}{2} s \pi - s r x - t \sin p x \right) \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+2}} Ei(-q).$$

$$\{(-1)^s e^{t e^{q p} + s q r} - e^{t e^{-q p} - s q r}\} (e^{q r} - e^{-q r})^s \quad (\text{VIII, 654}).$$

$$12) \int e^{t \cos p x} Ci(x) \cdot \sin^s r x \cdot \cos \left(\frac{1}{2} s \pi - s r x - t \sin p x \right) \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+2} q} Ei(-q).$$

$$\{(-1)^s e^{t e^{q p} + s q r} + e^{t e^{-q p} - s q r}\} (e^{q r} - e^{-q r})^s \quad (\text{VIII, 654}).$$

$$13) \int e^{t \cos p x} Si(x) \cdot \sin^s r x \cdot \sin \left(\frac{1}{2} s \pi - (sr+p)x - t \sin p x \right) \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+2} q} \{Ei(-q) - Ei(q)\}$$

$$(1 - e^{-2 q r})^s e^{t e^{-q p} - q p} \quad (\text{VIII, 655}).$$

$$14) \int e^{t \cos p x} Si(x) \cdot \sin^s r x \cdot \cos \left(\frac{1}{2} s \pi - (sr+p)x - t \sin p x \right) \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+2}} \{Ei(-q) - Ei(q)\}$$

$$(1 - e^{-2 q r})^s e^{t e^{-q p} - q p} \quad (\text{VIII, 655}).$$

$$15) \int e^{t \cos p x} Ci(x) \cdot \sin^s r x \cdot \sin \left(\frac{1}{2} s \pi - (sr+p)x - t \sin p x \right) \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+2}} Ei(-q).$$

$$\{(-1)^s e^{t e^{q p} + (sr+p)q} - e^{t e^{-q p} - (sr+p)q}\} (e^{q r} - e^{-q r})^s \quad (\text{VIII, 655}).$$

$$16) \int e^{t \cos p x} Ci(x) \cdot \sin^s r x \cdot \cos \left(\frac{1}{2} s \pi - (sr+p)x - t \sin p x \right) \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+2} q} Ei(-q).$$

$$\{(-1)^s e^{t e^{q p} + (sr+p)q} + e^{t e^{-q p} - (sr+p)q}\} (e^{q r} - e^{-q r})^s \quad (\text{VIII, 655}).$$

F. Alg. rat. fract. à dén. bin. $q^2 + x^2$;

Exponentielle;

Circ. Directe à plus. facteurs;

Une autre fonction.

TABLE 482.

Lim. 0 et ∞ .

$$1) \int e^{t \cos p x + t_1 \cos p_1 x + \dots} S_i(x) \cdot \cos^s r x \cdot \cos^{s_1} r_1 x \dots \sin \{(sr + s_1 r_1 + \dots)x + t \sin p x + t_1 \sin p_1 x + \dots\} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{2+s+s_1+\dots} q} \{Ei(q) - Ei(-q)\} \{(1 + e^{-2qr})^s (1 + e^{-2qr_1})^{s_1} \dots e^{t e^{-qr} + t_1 e^{-qr_1} + \dots} - 1\} \quad (\text{VIII, 653}).$$

$$2) \int e^{t \cos p x + t_1 \cos p_1 x + \dots} S_i(x) \cdot \cos^s r x \cdot \cos^{s_1} r_1 x \dots \cos \{(sr + s_1 r_1 + \dots)x + t \sin p x + t_1 \sin p_1 x + \dots\} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{2+s+s_1+\dots}} \{Ei(-q) - Ei(q)\} (1 + e^{-2qr})^s (1 + e^{-2qr_1})^{s_1} \dots e^{t e^{-qr} + t_1 e^{-qr_1} + \dots} \quad (\text{VIII, 652}).$$

$$3) \int e^{t \cos p x + t_1 \cos p_1 x + \dots} Ci(x) \cdot \cos^s r x \cdot \cos^{s_1} r_1 x \dots \sin \{(sr + s_1 r_1 + \dots)x + t \sin p x + t_1 \sin p_1 x + \dots\} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{2+s+s_1+\dots}} Ei(-q) \cdot (e^{qr} + e^{-qr})^s (e^{qr_1} + e^{-qr_1})^{s_1} \dots \{e^{t e^{-qr} + t_1 e^{-qr_1} + \dots} - (sr + s_1 r_1 + \dots)q - e^{t e^{qr} + t_1 e^{qr_1} + \dots} + (sr + s_1 r_1 + \dots)q\} \quad (\text{VIII, 653}).$$

$$4) \int e^{t \cos p x + t_1 \cos p_1 x + \dots} Ci(x) \cdot \cos^s r x \cdot \cos^{s_1} r_1 x \dots \cos \{(sr + s_1 r_1 + \dots)x + t \sin p x + t_1 \sin p_1 x + \dots\} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{2+s+s_1+\dots} q} Ei(-q) \cdot (e^{qr} + e^{-qr})^s (e^{qr_1} + e^{-qr_1})^{s_1} \dots \{e^{t e^{qr} + t_1 e^{qr_1} + \dots} + (sr + s_1 r_1 + \dots)q + e^{t e^{-qr} + t_1 e^{-qr_1} + \dots} - (sr + s_1 r_1 + \dots)q\} \quad (\text{VIII, 653}).$$

$$5) \int e^{t \cos p x + t_1 \cos p_1 x + \dots} Si(x) \cdot \sin^s r x \cdot \sin^{s_1} r_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots)x - t \sin p x - t_1 \sin p_1 x - \dots \right\} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{2+s+s_1+\dots} q} \{Ei(-q) - Ei(q)\} \{(1 - e^{-2qr})^s (1 - e^{-2qr_1})^{s_1} \dots e^{t e^{-qr} + t_1 e^{-qr_1} + \dots} - 1\} \quad (\text{VIII, 656}).$$

$$6) \int e^{t \cos p x + t_1 \cos p_1 x + \dots} Si(x) \cdot \sin^s r x \cdot \sin^{s_1} r_1 x \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots)x - t \sin p x - t_1 \sin p_1 x - \dots \right\} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{2+s+s_1+\dots}} \{Ei(-q) - Ei(q)\} (1 - e^{-2qr})^s (1 - e^{-2qr_1})^{s_1} \dots e^{t e^{-qr} + t_1 e^{-qr_1} + \dots} \quad (\text{VIII, 656}).$$

F. Alg. rat. fract. à dén. bin. $q^2 + x^2$;

Exponentielle;

Circ. Directe à plus. facteurs;

Une autre fonction.

TABLE 482, suite.

Lim. 0 et ∞ .

$$7) \int e^{t \cos p x + t_1 \cos p_1 x + \dots} Ci(x) \cdot \sin^s r x \cdot \sin^{s_1} r_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) x - \right. \\ \left. - t \sin p x - t_1 \sin p_1 x - \dots \right\} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{2+s+s_1+\dots}} Ei(-q) \cdot (e^{qr} - e^{-qr})^s (e^{q r_1} - e^{-q r_1})^{s_1} \dots \\ \{ (-1)^{s+s_1+\dots} e^{t e^{qp} + t_1 e^{q p_1} + \dots + (sr + s_1 r_1 + \dots) q} - e^{t e^{-qp} + t_1 e^{-q p_1} + \dots - (sr + s_1 r_1 + \dots) q} \} \\ \text{(VIII, 656).}$$

$$8) \int e^{t \cos p x + t_1 \cos p_1 x + \dots} Ci(x) \cdot \sin^s r x \cdot \sin^{s_1} r_1 x \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots) x - \right. \\ \left. - t \sin p x - t_1 \sin p_1 x - \dots \right\} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{2+s+s_1+\dots} q} Ei(-q) \cdot (e^{qr} - e^{-qr})^s (e^{q r_1} - e^{-q r_1})^{s_1} \dots \\ \{ (-1)^{s+s_1+\dots} e^{t e^{qp} + t_1 e^{q p_1} + \dots + (sr + s_1 r_1 + \dots) q} + e^{t e^{-qp} + t_1 e^{-q p_1} + \dots - (sr + s_1 r_1 + \dots) q} \} \\ \text{(VIII, 656).}$$

$$9) \int e^{t \cos p x + \dots} Si(x) \cdot \cos^s r x \dots \sin^n u x \dots \sin \left\{ (n + \dots) \frac{1}{2} \pi - (sr + \dots + nu + \dots) x - \right. \\ \left. - t \sin p x - \dots \right\} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{2+s+\dots+n+\dots} q} \{ Ei(-q) - Ei(q) \} \{ (1 + e^{-2qr})^s \dots \\ (1 - e^{-2qu})^n \dots e^{t e^{-qp} + \dots} - 1 \} \text{(VIII, 657).}$$

$$10) \int e^{t \cos p x + \dots} Si(x) \cdot \cos^s r x \dots \sin^n u x \dots \cos \left\{ (n + \dots) \frac{1}{2} \pi - (sr + \dots + nu + \dots) x - \right. \\ \left. - t \sin p x - \dots \right\} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{2+s+\dots+n+\dots}} \{ Ei(-q) - Ei(q) \} (1 + e^{-2qr})^s \dots \\ (1 - e^{-2qu})^n \dots e^{t e^{-qp} + \dots} \text{(VIII, 657).}$$

$$11) \int e^{t \cos p x + \dots} Ci(x) \cdot \cos^s r x \dots \sin^n u x \dots \sin \left\{ (n + \dots) \frac{1}{2} \pi - (sr + \dots + nu + \dots) x - \right. \\ \left. - t \sin p x - \dots \right\} \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{2+s+\dots+n+\dots}} Ei(-q) \cdot (e^{qr} + e^{-qr})^s \dots (e^{qu} - e^{-qu})^n \dots \\ \{ (-1)^{n+\dots} e^{t e^{qp} + \dots + (sr + \dots + nu + \dots) q} - e^{t e^{-qp} + \dots - (sr + \dots + nu + \dots) q} \} \text{(VIII, 657).}$$

$$12) \int e^{t \cos p x + \dots} Ci(x) \cdot \cos^s r x \dots \sin^n u x \dots \cos \left\{ (n + \dots) \frac{1}{2} \pi - (sr + \dots + nu + \dots) x - \right. \\ \left. - t \sin p x - \dots \right\} \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{2+s+\dots+n+\dots} q} Ei(-q) \cdot (e^{qr} + e^{-qr})^s \dots (e^{qu} - e^{-qu})^n \dots \\ \{ (-1)^{n+\dots} e^{t e^{qp} + \dots + (sr + \dots + nu + \dots) q} + e^{t e^{-qp} + \dots - (sr + \dots + nu + \dots) q} \} \text{(VIII, 657).}$$

F. Alg. rat. fract. à dén. bin. $q^2 + x^2$;

Exponentielle;

Circ. Directe à plus. facteurs;

Une autre fonction.

TABLE 482, suite.

Lim. 0 et ∞ .

$$13) \int e^{t \cos p x + \dots} Si(x) \cdot \cos^s r x \dots \sin^n u x \dots \sin \left\{ (n + \dots) \frac{1}{2} \pi - w x - t \sin p x - \dots \right\} \frac{dx}{q^2 + x^2} =$$

$$= \frac{\pi}{2^{2+s+\dots+n+\dots} q} \{ Ei(-q) - Ei(q) \} (e^{qr} + e^{-qr})^s \dots (e^{qu} - e^{-qu})^n \dots e^{t \cos p x + \dots - q w}$$

(VIII, 659).

$$14) \int e^{t \cos p x + \dots} Si(x) \cdot \cos^s r x \dots \sin^n u x \dots \cos \left\{ (n + \dots) \frac{1}{2} \pi - w x - t \sin p x - \dots \right\} \frac{x dx}{q^2 + x^2} =$$

$$= \frac{\pi}{2^{2+s+\dots+n+\dots} q} \{ Ei(-q) - Ei(q) \} (e^{qr} + e^{-qr})^s \dots (e^{qu} - e^{-qu})^n \dots e^{t \cos p x + \dots - q w}$$

(VIII, 658).

$$15) \int e^{t \cos p x + \dots} Ci(x) \cdot \cos^s r x \dots \sin^n u x \dots \sin \left\{ (n + \dots) \frac{1}{2} \pi - w x - t \sin p x - \dots \right\} \frac{x dx}{q^2 + x^2} =$$

$$= \frac{\pi}{2^{2+s+\dots+n+\dots} q} Ei(-q) \cdot \{ (-1)^{n+\dots} e^{t \cos p x + \dots + q w} - e^{t \cos p x + \dots - q w} \} (e^{qr} + e^{-qr})^s \dots (e^{qu} - e^{-qu})^n$$

(VIII, 659).

$$16) \int e^{t \cos p x + \dots} Ci(x) \cdot \cos^s r x \dots \sin^n u x \dots \cos \left\{ (n + \dots) \frac{1}{2} \pi - w x - t \sin p x - \dots \right\} \frac{dx}{q^2 + x^2} =$$

$$= \frac{\pi}{2^{2+s+\dots+n+\dots} q} Ei(-q) \cdot \{ (-1)^{n+\dots} e^{t \cos p x + \dots + q w} + e^{t \cos p x + \dots - q w} \} (e^{qr} + e^{-qr})^s \dots (e^{qu} - e^{-qu})^n \dots$$

(VIII, 659).

Dans 13) à 16) on a $w > sr + \dots + nu + \dots$

F. Alg. rat. fract. à dén. bin. $q^2 - x^2$;

Exponentielle;

Circ. Dir. à un ou deux fact.;

Une autre fonction.

TABLE 483.

Lim. 0 et ∞ .

$$1) \int e^{s \cos r x} Si(x) \cdot \sin(s \sin r x) \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} Si(q) \cdot \{ 1 - e^{s \cos q r} \cos(s \sin q r) \} \quad (\text{VIII, 650}).$$

$$2) \int e^{s \cos r x} Si(x) \cdot \cos(s \sin r x) \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \{ -Ci(q) + Si(q) \cdot e^{s \cos q r} \sin(s \sin q r) \} \quad (\text{VIII, 649}).$$

$$3) \int e^{s \cos r x} Si(x) \cdot \sin(s \sin r x + r x) \frac{dx}{q^2 - x^2} = \frac{-\pi}{2q} Si(q) \cdot e^{s \cos q r} \cos(s \sin q r + q r) \quad (\text{VIII, 650}).$$

$$4) \int e^{s \cos r x} Si(x) \cdot \cos(s \sin r x + r x) \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} Si(q) \cdot e^{s \cos q r} \sin(s \sin q r + q r) \quad (\text{VIII, 650}).$$

F. Alg. rat. fract. à dén. bin. $q^2 - x^2$;

Exponentielle;

Circ. Dir. à un ou deux fact.;

Une autre fonction.

TABLE 483, suite.

Lim. 0 et ∞ .

$$5) \int e^{s(\cos r x + s_1 \cos r_1 x + \dots) Si(x) \cdot \sin(s \sin r x + s_1 \sin r_1 x + \dots)} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} Si(q) \cdot \{1 - e^{s \cos q r + s_1 \cos q r_1 + \dots} \cos(s \sin q r + s_1 \sin q r_1 + \dots)\} \text{ (VIII, 651).}$$

$$6) \int e^{s(\cos r x + s_1 \cos r_1 x + \dots) Si(x) \cdot \cos(s \sin r x + s_1 \sin r_1 x + \dots)} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \{-Ci(q) + Si(q) \cdot e^{s \cos q r + s_1 \cos q r_1 + \dots} \sin(s \sin q r + s_1 \sin q r_1 + \dots)\} \text{ (VIII, 651).}$$

$$7) \int e^{s(\cos r x + s_1 \cos r_1 x + \dots) Si(x) \cdot \sin(s \sin r x + s_1 \sin r_1 x + \dots + px)} \frac{dx}{q^2 - x^2} = -\frac{\pi}{2q} e^{s(\cos q r + s_1 \cos q r_1 + \dots) Si(q) \cdot \cos(s \sin q r + s_1 \sin q r_1 + \dots + qp)} \text{ (H, 116).}$$

$$8) \int e^{s(\cos r x + s_1 \cos r_1 x + \dots) Si(x) \cdot \cos(s \sin r x + s_1 \sin r_1 x + \dots + px)} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} e^{s(\cos q r + s_1 \cos q r_1 + \dots) Si(q) \cdot \sin(s \sin q r + s_1 \sin q r_1 + \dots + qp)} \text{ (H, 116).}$$

$$9) \int e^{t \cos p x} Si(x) \cdot \cos^s r x \cdot \sin(s r x + t \sin p x) \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} Si(q) \cdot \{2^{-s} - e^{t \cos q p} \cos^s q r \cdot \cos(t \sin q p + s q r)\} \text{ (VIII, 651).}$$

$$10) \int e^{t \cos p x} Si(x) \cdot \cos^s r x \cdot \cos(s r x + t \sin p x) \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \{-2^{-s} Ci(q) + Si(q) \cdot e^{t \cos q p} \cos^s q r \cdot \sin(t \sin q p + s q r)\} \text{ (VIII, 651).}$$

$$11) \int e^{t \cos p x} Si(x) \cdot \cos^s r x \cdot \sin\{(sr + p)x + t \sin p x\} \frac{dx}{q^2 - x^2} = -\frac{\pi}{2q} Si(q) \cdot e^{t \cos q p} \cos^s q r \cdot \cos\{t \sin q p + (sr + p)q\} \text{ (VIII, 652).}$$

$$12) \int e^{t \cos p x} Si(x) \cdot \cos^s r x \cdot \cos\{(sr + p)x + t \sin p x\} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} Si(q) \cdot e^{t \cos q p} \cos^s q r \cdot \sin\{t \sin q p + (sr + p)q\} \text{ (VIII, 652).}$$

$$13) \int e^{t \cos p x} Si(x) \cdot \sin^s r x \cdot \sin\left\{\frac{1}{2} s \pi - s r x - t \sin p x\right\} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} Si(q) \cdot \left\{-2^{-s} + e^{t \cos q p} \sin^s q r \cdot \cos\left(\frac{1}{2} s \pi - s q r - t \sin q p\right)\right\} \text{ (VIII, 655).}$$

$$14) \int e^{t \cos p x} Si(x) \cdot \sin^s r x \cdot \cos\left\{\frac{1}{2} s \pi - s r x - t \sin p x\right\} \frac{x dx}{q^2 - x^2} = \frac{-\pi}{2} \left\{2^{-s} Ci(q) + Si(q) \cdot e^{t \cos q p} \sin^s q r \cdot \sin\left(\frac{1}{2} s \pi - s q r - t \sin q p\right)\right\} \text{ (VIII, 651).}$$

F. Alg. rat. fract. à dén. bin. $q^2 - x^2$;

Exponentielle;

Circ. Dir. à un ou deux fact.;

Une autre fonction.

TABLE 483, suite.

Lim. 0 et ∞ .

$$15) \int e^{t \cos p x} \text{Si}(x) \cdot \text{Sin}^s r x \cdot \text{Sin} \left\{ \frac{1}{2} s \pi - (sr + p)x - t \text{Sin} p x \right\} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \text{Si}(q) \cdot e^{t \cos q p} \text{Sin}^s q r \cdot \cos \left\{ \frac{1}{2} s \pi - (sr + p)q - t \text{Sin} q p \right\} \quad (\text{VIII, 655}).$$

$$16) \int e^{t \cos p x} \text{Si}(x) \cdot \text{Sin}^s r x \cdot \cos \left\{ \frac{1}{2} s \pi - (sr + p)x - t \text{Sin} p x \right\} \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} \text{Si}(q) \cdot e^{t \cos q p} \text{Sin}^s q r \cdot \sin \left\{ \frac{1}{2} s \pi - (sr + p)q - t \text{Sin} q p \right\} \quad (\text{VIII, 655}).$$

F. Alg. rat. fract. à dén. bin. $q^2 - x^2$;

Exponentielle;

Circ. Directe à plus. facteurs;

Une autre fonction.

TABLE 484.

Lim. 0 et ∞ .

$$1) \int e^{t \cos p x + t_1 \cos p_1 x + \dots} \text{Si}(x) \cdot \cos^s r x \cdot \cos^{s_1} r_1 x \dots \sin \left\{ (sr + s_1 r_1 + \dots)x + t \text{Sin} p x + t_1 \text{Sin} p_1 x + \dots \right\} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \text{Si}(q) \cdot [2^{-s-s_1-\dots} - e^{t \cos q p + t_1 \cos q p_1 + \dots} \cos^s q r \cdot \cos^{s_1} q r_1 \dots \cos \left\{ (sr + s_1 r_1 + \dots)q + t \text{Sin} q p + t_1 \text{Sin} q p_1 + \dots \right\}] \quad (\text{VIII, 654}).$$

$$2) \int e^{t \cos p x + t_1 \cos p_1 x + \dots} \text{Si}(x) \cdot \cos^s r x \cdot \cos^{s_1} r_1 x \dots \cos \left\{ (sr + s_1 r_1 + \dots)x + t \text{Sin} p x + t_1 \text{Sin} p_1 x + \dots \right\} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} [-2^{-s-s_1-\dots} \text{Ci}(q) + \text{Si}(q) \cdot e^{t \cos q p + t_1 \cos q p_1 + \dots} \cos^s q r \cdot \cos^{s_1} q r_1 \dots \sin \left\{ (sr + s_1 r_1 + \dots)q + t \text{Sin} q p + t_1 \text{Sin} q p_1 + \dots \right\}] \quad (\text{VIII, 654}).$$

$$3) \int e^{t \cos p x + t_1 \cos p_1 x + \dots} \text{Si}(x) \cdot \text{Sin}^s r x \cdot \text{Sin}^{s_1} r_1 x \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots)x - t \text{Sin} p x - t_1 \text{Sin} p_1 x - \dots \right\} \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \text{Si}(q) \cdot [-2^{-s-s_1-\dots} + e^{t \cos q p + t_1 \cos q p_1 + \dots} \text{Si}(q) \cdot \text{Sin}^s q r \cdot \text{Sin}^{s_1} q r_1 \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots)q - t \text{Sin} q p - t_1 \text{Sin} q p_1 - \dots \right\}] \quad (\text{VIII, 657}).$$

$$4) \int e^{t \cos p x + t_1 \cos p_1 x + \dots} \text{Si}(x) \cdot \text{Sin}^s r x \cdot \text{Sin}^{s_1} r_1 x \dots \cos \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots)x - t \text{Sin} p x - t_1 \text{Sin} p_1 x - \dots \right\} \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} [-2^{-s-s_1-\dots} \text{Ci}(q) + e^{t \cos q p + t_1 \cos q p_1 + \dots} \text{Si}(q) \cdot \text{Sin}^s q r \cdot \text{Sin}^{s_1} q r_1 \dots \sin \left\{ (s + s_1 + \dots) \frac{1}{2} \pi - (sr + s_1 r_1 + \dots)q - t \text{Sin} q p - t_1 \text{Sin} q p_1 - \dots \right\}] \quad (\text{VIII, 657}).$$

F. Alg. rat. fract. à dén. bin. $q^2 - x^2$;

Exponentielle;

Circ. Directe à plus. facteurs;

Une autre fonction.

TABLE 484, suite.

Lim. 0 et ∞ .

$$5) \int e^{t \cos p x + \dots} Si(x) \cdot \cos^s r x \dots \sin^n u x \dots \sin \left\{ (n + \dots) \frac{1}{2} \pi - (sr + \dots + nu + \dots) x - t \sin p x - \dots \right\} \\ \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} Si(q) \cdot \left[e^{t \cos q p + \dots} \cos^s q r \dots \sin^n q u \dots \cos \left\{ (n + \dots) \frac{1}{2} \pi - (sr + \dots + nu + \dots) q - \right. \right. \\ \left. \left. - t \sin q p - \dots \right\} - 2^{-s-\dots-n-\dots} \right] \text{ (VIII, 658).}$$

$$6) \int e^{t \cos p x + \dots} Si(x) \cdot \cos^s r x \dots \sin^n u x \dots \cos \left\{ (n + \dots) \frac{1}{2} \pi - (sr + \dots + nu + \dots) x - \right. \\ \left. - t \sin p x - \dots \right\} \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} \left\{ Si(q) \cdot e^{t \cos q p + \dots} \cos^s q r \dots \sin^n q u \dots \sin \left\{ (n + \dots) \frac{1}{2} \pi - \right. \right. \\ \left. \left. - (sr + \dots + nu + \dots) q - t \sin q p - \dots \right\} + 2^{-s-\dots-n-\dots} \cdot Ci(q) \right\} \text{ (VIII, 658).}$$

$$7) \int e^{t \cos p x + \dots} Si(x) \cdot \cos^s r x \dots \sin^n u x \dots \sin \left\{ (n + \dots) \frac{1}{2} \pi - w x - t \sin p x - \dots \right\} \frac{dx}{q^2 - x^2} = \\ = \frac{\pi}{2q} Si(q) \cdot e^{t \cos q p + \dots} \cos^s q r \dots \sin^n q u \dots \cos \left\{ (n + \dots) \frac{1}{2} \pi - w q - t \sin q p - \dots \right\} \\ \text{ (VIII, 659).}$$

$$8) \int e^{t \cos p x + \dots} Si(x) \cdot \cos^s r x \dots \sin^n u x \dots \cos \left\{ (n + \dots) \frac{1}{2} \pi - w x - t \sin p x - \dots \right\} \frac{x dx}{q^2 - x^2} = \\ = -\frac{\pi}{2} Si(q) \cdot e^{t \cos q p + \dots} \cos^s q r \dots \sin^n q u \dots \sin \left\{ (n + \dots) \frac{1}{2} \pi - w q - t \sin q p - \dots \right\} \\ \text{ (VIII, 659).}$$

Dans 7) et 8) on a $w > sr + \dots + nu + \dots$

F. Alg. rat. fract. à dén. bin.;

Logarithmique;

Circulaire Directe;

Une autre fonction.

TABLE 485.

Lim. diverses.

$$1) \int_0^\infty \frac{\cos p x \cdot l(1+x^2) - 2 \sin p x \cdot \text{Arctg} x}{\left\{ \frac{1}{2} l(1+x^2) \right\}^2 + (\text{Arctg} x)^2} \frac{dx}{x^2 + q^2} = \frac{\pi}{q} \left\{ \frac{e^{-p q}}{l(1+q)} - \frac{1}{q} \right\} \text{ (IV, 570).}$$

$$2) \int_0^\infty \frac{\cos \left(\frac{1}{2} r \pi - p x \right) \cdot l(1+x^2) + 2 \sin \left(\frac{1}{2} r \pi - p x \right) \cdot \text{Arctg} x}{\left\{ \frac{1}{2} l(1+x^2) \right\}^2 + (\text{Arctg} x)^2} \frac{x^r dx}{x^2 + q^2} = \frac{\pi q^{r-1}}{l(1+q)} e^{-p q}$$

(IV, 570).

$$3) \int_0^{\infty} \frac{\sin rx \cdot l(1+p^2 x^2) + 2 \cos rx \cdot \text{Arctg } px}{\left\{ \frac{1}{2} l(1+p^2 x^2) \right\}^2 + \{\text{Arctg } px\}^2} \frac{x dx}{q^2 + x^2} = \frac{\pi e^{-qr}}{l(1+pq)} \quad (\text{IV, 571*}).$$

$$4) \int_0^{\infty} l(\sin^2 rx) \cdot \text{Si}(x) \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} \{Ei(-q) - Ei(q)\} l \frac{1 - e^{-2qr}}{2} \quad (\text{VIII, 646}).$$

$$5) \int_0^{\infty} l(\sin^2 rx) \cdot \text{Ci}(x) \frac{dx}{q^2 + x^2} = \frac{\pi}{q} Ei(-q) \cdot l \frac{e^{qr} - e^{-qr}}{2} \quad (\text{VIII, 646}).$$

$$6) \int_0^{\infty} l(\cos^2 rx) \cdot \text{Si}(x) \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} \{Ei(-q) - Ei(q)\} l \frac{1 + e^{-2qr}}{2} \quad (\text{VIII, 645}).$$

$$7) \int_0^{\infty} l(\cos^2 rx) \cdot \text{Ci}(x) \frac{dx}{q^2 + x^2} = \frac{\pi}{q} Ei(-q) \cdot l \frac{e^{qr} + e^{-qr}}{2} \quad (\text{VIII, 645}).$$

$$8) \int_0^{\infty} l(Tg^2 rx) \cdot \text{Si}(x) \frac{x dx}{q^2 + x^2} = \frac{\pi}{2} \{Ei(-q) - Ei(q)\} l \frac{e^{qr} - e^{-qr}}{e^{qr} + e^{-qr}} \quad (\text{VIII, 647}).$$

$$9) \int_0^{\infty} l(Tg^2 rx) \cdot \text{Ci}(x) \frac{dx}{q^2 + x^2} = \frac{\pi}{q} Ei(-q) \cdot l \frac{e^{qr} - e^{-qr}}{e^{qr} + e^{-qr}} \quad (\text{VIII, 645}).$$

$$10) \int_0^{\infty} l(\text{Sin}^2 rx) \cdot \text{Si}(x) \frac{x dx}{q^2 - x^2} = \pi \left\{ \text{Ci}(q) \cdot l2 + \left(qr - \frac{1}{2} \pi \right) \text{Si}(q) \right\} \quad (\text{VIII, 647}).$$

$$11) \int_0^{\infty} l(\cos^2 rx) \cdot \text{Si}(x) \frac{x dx}{q^2 - x^2} = \pi \{ \text{Ci}(q) \cdot l2 + qr \text{Si}(q) \} \quad (\text{VIII, 645}).$$

$$12) \int_0^{\infty} l(Ty^2 rx) \cdot \text{Si}(x) \frac{x dx}{q^2 - x^2} = -\frac{1}{2} \pi^2 \text{Si}(q) \quad (\text{VIII, 647}).$$

$$13) \int_{-\infty}^{\infty} \cos(p \text{Arctg } qx) \frac{l(1+q^2 x^2)}{(1+q^2 x^2)^{1+p}} \frac{dx}{1+x^2} = \frac{2\pi}{(1+q)^p} l(1+q) \quad (\text{IV, 571}).$$

$$14) \int_{-\infty}^{\infty} (e^{\nu \text{Arctg } qx} + e^{-\nu \text{Arctg } qx}) \sin \left\{ \frac{p}{2} l(1+q^2 x^2) \right\} \frac{dx}{1+x^2} = 2q \sin \{p l(1+q)\} \quad (\text{IV, 571}).$$

$$15) \int_{-\infty}^{\infty} (e^{\nu \text{Arctg } qx} + e^{-\nu \text{Arctg } qx}) \cos \left\{ \frac{p}{2} l(1+q^2 x^2) \right\} \frac{dx}{1+x^2} = 2\pi \cos \{p l(1+q)\} \quad (\text{IV, 571}).$$

F. Alg. irrat. fract.;
 Circulaire Directe;
 Circulaire Inverse;
 Une autre fonction.

TABLE 486.

Lim. diverses.

$$1) \int_0^1 \{e^{q\sqrt{1-x^2}} - e^{-q\sqrt{1-x^2}}\} \sin qx \cdot \sin(2a \operatorname{Arccos} x) \frac{dx}{\sqrt{1-x^2}} = \frac{\pi}{2} \frac{(-1)^{a-1} q^{2a}}{1^{2a-1}} \text{ V. T. 271, N. 4.}$$

$$2) \int_0^1 \{e^{q\sqrt{1-x^2}} + e^{-q\sqrt{1-x^2}}\} \sin qx \cdot \cos\{(2a-1) \operatorname{Arccos} x\} \frac{dx}{\sqrt{1-x^2}} = \frac{\pi}{2} \frac{(-1)^{a-1} q^{2a-1}}{1^{2a-1/1}} \\ \text{V. T. 271, N. 5.}$$

$$3) \int_0^1 \{e^{q\sqrt{1-x^2}} - e^{-q\sqrt{1-x^2}}\} \cos qx \cdot \sin\{(2a-1) \operatorname{Arccos} x\} \frac{dx}{\sqrt{1-x^2}} = \frac{\pi}{2} \frac{(-1)^{a-1} q^{2a-1}}{1^{2a-1/1}} \\ \text{V. T. 271, N. 6.}$$

$$4) \int_0^1 \{e^{q\sqrt{1-x^2}} + e^{-q\sqrt{1-x^2}}\} \cos qx \cdot \cos(2a \operatorname{Arccos} x) \frac{dx}{\sqrt{1-x^2}} = \frac{\pi}{2} \frac{(-1)^a q^{2a}}{1^{2a/1}} \text{ V. T. 271, N. 7.}$$

$$5) \int_0^\infty \sin(q \operatorname{Arctg} x) \cdot lx \frac{dx}{x(1+x^2)^{1/2}} = -\frac{\pi}{2} \{A + Z'(q)\} \text{ V. T. 307, N. 11.}$$

$$6) \int_0^\infty \cos(q \operatorname{Arctg} x) \cdot lx \frac{dx}{(1+x^2)^{1/2}} = -\frac{\pi}{2(q-1)} \text{ V. T. 307, N. 10.}$$

$$7) \int_0^\infty \sin(q \operatorname{Arccot} x) \cdot lx \frac{x^{q-1} dx}{(1+x^2)^{1/2}} = \frac{\pi}{2} \{A + Z'(q)\} \text{ V. T. 486, N. 5.}$$

$$8) \int_0^\infty \cos(q \operatorname{Arccot} x) \cdot lx \frac{x^{q-1} dx}{(1+x^2)^{1/2}} = \frac{\pi}{2(q-1)} \text{ V. T. 486, N. 6.}$$

$$9) \int_0^\infty \sin\left\{(r+1) \operatorname{Arctg}\left(\frac{p}{qx}\right)\right\} \cdot lx \frac{x^r}{\sqrt{p^2 + q^2 x^{2r+1}}} dx = \frac{\pi}{2q^{r+1}} \left\{l \frac{p}{q} + A + Z'(r+1)\right\} \\ \text{V. T. 307, N. 11.}$$

$$10) \int_0^\infty \cos\left\{(r+1) \operatorname{Arctg}\left(\frac{p}{qx}\right)\right\} \cdot lx \frac{x^{r-1}}{\sqrt{p^2 + q^2 x^{2r+1}}} dx = \frac{\pi}{2p^r q^r} \text{ V. T. 307, N. 10.}$$

$$11) \int_0^\infty e^{s \operatorname{Arctg} x} \cos\left\{s \operatorname{Sin} r x + a \operatorname{Arctg} \frac{x}{q}\right\} \frac{dx}{(q^2 + x^2)^{1/2}} = 0 \text{ (H, 64).}$$

A D D I T I O N S.

$$T. 14. \quad 11) \int \frac{dx}{\sqrt{(1-x^2)(1-x^2+p^2x^2)}} = F(\sqrt{1-p^2}) \text{ (VIII, 344).}$$

$$T. 17. \quad 24) \int \frac{x^p dx}{(2+x^2)^q} = 2^{1/p-q-1} \frac{\Gamma\left(\frac{p+1}{2}\right) \Gamma\left(q-\frac{p+1}{2}\right)}{\Gamma(q)} \text{ (VIII, 293).}$$

$$T. 18. \quad 16) \int \left[\frac{1}{1+x^{2a}} - \frac{1}{1+x^2} \right] \frac{dx}{x} = 0 \text{ (VIII, 701).}$$

$$17) \int \left[\frac{1}{1+x^{2a}} - \frac{1}{1+x^{2b}} \right] \frac{dx}{x} = 0 \text{ (VIII, 702).}$$

$$18) \int \frac{\left(x - \frac{1}{x}\right)^p}{\left(x^2 + \frac{1}{x^2}\right)^q} \left(x + \frac{1}{x}\right) \frac{dx}{x} = 2^{1/p-q+1} \cos^2 \frac{1}{2} p \pi \frac{\Gamma\left(\frac{p+1}{2}\right) \Gamma\left(q-\frac{p+1}{2}\right)}{\Gamma(q)} \text{ (VIII, 293).}$$

$$T. 35. \quad 32) \int (\cot x - 1)^{r-1} \frac{dx}{\sin 2x} = \frac{\pi}{2 \sin r \pi} \text{ (VIII, 545).}$$

$$T. 41. \quad 22) \int \cos^{p+1} x \cdot \cos p x dx = \frac{\pi}{2^{p+1} r-1} \frac{\Gamma(p+2r-1)}{\Gamma(p+r) \Gamma(r)} \text{ (VIII, 611).}$$

T. 59. 34) $\int \frac{\sin x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{5p^2} \left[-1 + \frac{1}{\sqrt{1-p^2}} \right]$

35) $\int \frac{\sin x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{15p^4} \left[-(2+3p^2) + \frac{2}{\sqrt{1-p^2}} \right]$

36) $\int \frac{\sin x \cdot \cos^5 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{15p^6} \left[-(8+4p^2+3p^4) + \frac{8}{\sqrt{1-p^2}} \right]$

37) $\int \frac{\sin x \cdot \cos^7 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{5p^8} [(16-8p^2-2p^4-p^6) - 16\sqrt{1-p^2}]$

38) $\int \frac{\sin^3 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{15p^4} \left[2 - \frac{2-5p^2}{\sqrt{1-p^2}} \right],$

39) $\int \frac{\sin^3 x \cdot \cos^3 x}{\sqrt{1-p^2 \cos^2 x}} dx = \frac{2}{15p^6} \left[(4+p^2) - \frac{4-5p^2}{\sqrt{1-p^2}} \right]$

40) $\int \frac{\sin^3 x \cdot \cos^5 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{2}{15p^8} \left[-(24-8p^2-p^4) + 4 \frac{6-5p^2}{\sqrt{1-p^2}} \right]$

41) $\int \frac{\sin^5 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{15p^6} \left[-8 + \frac{8-20p^2+25p^4}{\sqrt{1-p^2}} \right]$

42) $\int \frac{\sin^5 x \cdot \cos^3 x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{2}{15p^8} \left[4(6-p^2) - \frac{24-40p^2+15p^4}{\sqrt{1-p^2}} \right]$

43) $\int \frac{\sin^7 x \cdot \cos x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{1}{5p^8} \left[-16 + \frac{16-40p^2+30p^4-5p^6}{\sqrt{1-p^2}} \right]$

Sur 34) à 43) voyez M., D. 16, 28.

T. 62. 17) $\int \sin^{2b+1} x \cdot \sin \{(2a+1)x\} dx = \frac{(-1)^a \pi}{2^{2b+1}} \binom{2b+1}{b-a} \text{ (VIII, 275).}$

18) $\int \sin^{2b} x \cdot \cos 2ax dx = \frac{(-1)^a \pi}{2^{2b}} \binom{2b}{b-a} \text{ (VIII, 275).}$

19) $\int \cos^{2b} x \cdot \cos 2ax dx = \frac{\pi}{2^{2b}} \binom{2b}{b-a} \text{ (VIII, 275).}$

20) $\int \cos^{2b+1} x \cdot \cos \{(2a+1)x\} dx = \frac{\pi}{2^{2b+1}} \binom{2b+1}{b-a} \text{ (VIII, 275).}$

$$\text{T. 65. } 23) \int \frac{\sin x}{1-2p \cos x + p^2} dx = \frac{1}{p} \int \frac{1-p}{1+p} [p^2 < 1], = \frac{1}{p} \int \frac{p-1}{p+1} [p^2 > 1] \text{ (VIII, 679*)}.$$

$$\begin{aligned} \text{T. 87. } 9) \int \frac{(1+x^2)^{2a-1} \{e^{p(i-x)} + e^{p(x-i)}\} - (1-x^2)^{2a-1} \{e^{p(x+i)} + e^{-p(x+i)}\}}{i} \frac{dx}{e^{2\pi x} - 1} = \\ = (-1)^a \sum_a \left\{ \frac{2^{2a-1} - 1}{n} B_{2a-1} + (-1)^n \frac{2n-1}{2n} \right\} \frac{p^{2a-1}}{1^{2a-2a/1}} \text{ (VIII, 578).} \\ 10) \int \frac{(1+x^2)^{2a-1} \{e^{p(i-x)} + e^{p(x-i)}\} - (1-x^2)^{2a-1} \{e^{p(x+i)} + e^{-p(x+i)}\}}{i} \frac{dx}{e^{2\pi x} - 1} = \\ = (-1)^a \sum_a \left\{ \frac{1}{n} B_{2a-1} + (-1)^{n-1} \frac{n-1}{n} \right\} \frac{p^{2a-1}}{1^{2a-2a/1}} \text{ (VIII, 578).} \end{aligned}$$

$$\text{T. 97. } 24) \int \frac{x}{e^{px} - e^{-px}} \frac{dx}{q^2 + x^2} = \frac{\pi}{4pq} + \frac{\pi}{2} \sum_i \frac{(-1)^n}{2pq + (2n-1)\pi} \text{ (VIII, 636*)}.$$

$$\text{T. 107. } 24) \int \sqrt{\left(\frac{1}{x}\right)} \cdot x^{p-1} dx = \frac{1}{2p} \sqrt{\frac{\pi}{p}} \text{ (VIII, 542).}$$

$$\text{T. 123. } 19) \int (x^p - 1)^a (x^q - 1) \frac{dx}{lx} = \sum_0^a (-1)^n \binom{a}{n} \int \frac{q + (a-n)p + 1}{(a-n)p + 1} \text{ (VIII, 347).}$$

$$\text{T. 130. } 25) \int \frac{x^q - x^{-q}}{x^p + x^{-p}} \frac{dx}{x lx} = 2T_9 \left(\frac{p+q}{p} \frac{\pi}{4} \right) \text{ (VIII, 350).}$$

$$\text{T. 141. } 14) \int \int \left(\frac{1+x^2}{x} \right) \cdot x^{2a-1} dx = \frac{1}{a} l2 + \frac{1}{2a^2} - \frac{1}{a} \sum_0^{\infty} \frac{(-1)^n}{2a+n+1} \text{ (VIII, 422).}$$

$$\text{T. 144. } 18) \int lx \frac{dx}{(1+x^2)^2} = l2 \text{ (VIII, 590*)}.$$

$$\text{T. 145. } 38) \int_{-1}^{+1} \int (1-p^2 x^2)^2 \frac{dx}{\sqrt{1-x^2}} = 4\pi \int \frac{1+\sqrt{1-p^2}}{2} [p^2 < 1], = -4\pi \int 2p [p^2 > 1] \text{ (VIII, 550).}$$

$$39) \int_{-1}^{+1} \int (p^2 - x^2)^2 \frac{dx}{\sqrt{1-x^2}} = -4\pi \int 2 [p^2 < 1], = 4\pi \int \frac{p+\sqrt{p^2-1}}{2} [p^2 > 1] \text{ (VIII, 550).}$$

T. 151. 29) $\int \sin^s rx \cdot \sin \left\{ s \left(\frac{1}{2} \pi - rx \right) \right\} \frac{dx}{x} = -\frac{\pi}{2^{s+1}} \text{ (H, 12).}$

30) $\int \cos^s rx \cdot \sin srx \frac{dx}{x} = \frac{\pi}{2^{s+1}} (2^s - 1) \text{ (H, 11).}$

31) $\int \cos^s rx \cdot \sin tx \frac{dx}{x} = \frac{\pi}{2} [t > rs] \text{ (H, 24).}$

T. 152. 24) $\int \sin^s rx \cdot \sin \left\{ s \left(\frac{1}{2} \pi - rx \right) \right\} \cdot \sin x \frac{dx}{x} = -\frac{\pi}{2^{s+1}} \text{ (H, 13).}$

25) $\int \sin^s rx \cdot \sin \left\{ s \left(\frac{1}{2} \pi - rx \right) \right\} \cdot \cos x \frac{dx}{x} = -\frac{\pi}{2^{s+1}} \text{ (H, 12).}$

26) $\int \sin^s rx \cdot \cos \left\{ s \left(\frac{1}{2} \pi - rx \right) \right\} \cdot \sin x \frac{dx}{x} = \frac{\pi}{2^{s+1}} \text{ (H, 12).}$

27) $\int \cos^s rx \cdot \sin srx \cdot \cos x \frac{dx}{x} = \frac{\pi}{2^{s+1}} (2^s - 1) \text{ (H, 11).}$

28) $\int \cos^s rx \cdot \cos srx \cdot \sin x \frac{dx}{x} = \frac{\pi}{2^{s+1}} \text{ (H, 11).}$ 29) $\int \cos^s rx \cdot \sin tx \cdot \cos x \frac{dx}{x} = \frac{\pi}{2} \text{ (H, 24).}$

30) $\int \cos^s rx \cdot \cos tx \cdot \sin x \frac{dx}{x} = 0 \text{ (H, 24).}$

[Dans 29) et 30) on a $t > sr$].

T. 157. 29) $\int \sin^2 qx \cdot \sin^2 rx \cdot \sin px \frac{dx}{x^3} = \frac{1}{4} p r \pi [2q \geq 2r + p > 2p], = \frac{1}{32} \pi \{ 16qr - (2q + 2r - p)^2 \}$

$[2r > p > 2(q - r)], = \frac{3}{8} q^2 \pi [2r = 2q = p], = \frac{1}{2} r^2 \pi [2r = p \leq q], = \frac{1}{8} q^2 \pi [2r = p = q], =$

$= \frac{1}{8} q \pi (4r - q) [2q > p = 2r > q], = \frac{1}{16} \pi (4r^2 + p^2) [2q \geq 2r + p > 4r], =$

$= \frac{1}{32} \pi [(2q + 2r - p)^2 - 8q(q - p)] [2q < 2r + p < 2s < 4q], = \frac{1}{8} \pi (2q^2 + r^2)$

$[2q = p > 2r], = \frac{1}{32} \pi \{ (2q + 2r - p)^2 + 2p^2 \} [2q < p > 2r], = \frac{1}{16} p^2 \pi$

$[p - 2r \geq 2q < p] \text{ (E. O. A.).}$

30) $\int \sin^{2a} x \cdot \cos px \frac{dx}{x^3} = \frac{\pi}{2^{2a+1}} \left\{ -\binom{2a}{a} p + 4 \sum_1^a (-1)^n \binom{2a}{a-n} n \right\} \text{ Enneper, Schl. Z. 11, 251.}$

$$T. 158. \quad 9) \int (1 - \cos^{2a} x) \cos p x \frac{dx}{x^2} = \frac{\pi}{2^{2a+1}} \left[p \left\{ \binom{2a}{a} - 2^{2a} \right\} + 2a \binom{2a}{a} \right]$$

$$10) \int (1 - \cos^{2a+1} x) \cos p x \frac{dx}{x^2} = \frac{\pi}{2^{2a+1}} \left[-p \cdot 2^{2a} + (2a+1) \binom{2a}{a} \right]$$

$$11) \int (1 - \cos^{2a} x) \sin p x \frac{dx}{x^2} = \frac{\pi}{2^{2a+1}} \left[p^2 \left\{ \binom{2a}{a} - 2^{2a} \right\} + 4ap \binom{2a}{a} \right]$$

$$12) \int (1 - \cos^{2a+1} x) \sin p x \frac{dx}{x^2} = \frac{\pi}{2^{2a+1}} \left[-p^2 \cdot 2^{2a+1} + 4(2a+1)p \binom{2a}{a} \right]$$

Sur 9) à 12) voyez Enneper, Schl. Z. 11, 251.

$$T. 160. \quad 31) \int \sin^2 p x \frac{x dx}{q^2 + x^2} = \infty = \quad 32) \int \cos^2 p x \frac{x dx}{q^2 + x^2} \quad (\text{VIII}, 334).$$

$$T. 163. \quad 20) \int \cos^a x \cdot \cos a x \frac{x dx}{q^2 + x^2} = \infty \quad (\text{V}, 17).$$

$$21) \int \cos^a x \cdot \cos 2ax \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{a+1} q} e^{-aq} (1 + e^{-2q})^a \quad (\text{V}, 21).$$

$$22) \int \cos^a x \cdot \cos 2ax \frac{x dx}{q^2 + x^2} = -\frac{1}{2^{a+1}} \left[e^{aq} \sum_0^a \binom{a}{n} e^{2nq} Ei\{-q(a+2n)\} + e^{-aq} \sum_0^a \binom{a}{n} e^{-2nq} Ei\{q(a+2n)\} \right] \quad (\text{V}, 26).$$

$$23) \int \cos^a x \cdot \cos 3ax \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{a+1} q} e^{-aq} (1 + e^{-2q})^a \quad (\text{V}, 21).$$

$$24) \int \cos^a x \cdot \cos 3ax \frac{x dx}{q^2 + x^2} = -\frac{1}{2^{a+1}} \left[e^{2aq} \sum_0^a \binom{a}{n} e^{2nq} Ei\{-2q(a+n)\} + e^{-2aq} \sum_0^a \binom{a}{n} e^{-2nq} Ei\{2q(a+n)\} \right] \quad (\text{V}, 26).$$

$$25) \int \cos^a x \cdot \cos\{(a-1)x\} \frac{x dx}{q^2 + x^2} = -\frac{1}{2^{a+1}} \left[e^{-q} \sum_0^a \binom{a}{n} e^{2nq} Ei\{q(1-2n)\} + e^q \sum_0^a \binom{a}{n} e^{-2nq} Ei\{q(2n-1)\} \right] \quad (\text{V}, 27).$$

$$26) \int \cos^a x \cdot \cos\{(a+1)x\} \frac{x dx}{q^2 + x^2} = -\frac{1}{2^{a+1}} \left[e^q \sum_0^a \binom{a}{n} e^{2nq} Ei\{-q(2n+1)\} + e^{-q} \sum_0^a \binom{a}{n} e^{-2nq} Ei\{q(2n+1)\} \right] \quad (\text{V}, 27).$$

T. 159. 29) $\int \sin qx \cdot \sin^{2a} x \frac{dx}{x^{2b}} = \frac{(-1)^b}{2^{2a+1} 1^{2b-1/1}} \left[\binom{2a}{a} q^{2b-1} lq + \sum_1^a (-1)^n \binom{2a}{a-n} \{ (2n+q)^{2b-1} l(2n+q) - (2n-q)^{2b-1} l(2n-q) \} \right]$

30) $\int \sin qx \cdot \sin^{2a+1} x \frac{dx}{x^{2b+1}} = \frac{(-1)^b}{2^{2a+1} 1^{2b/1}} \sum_0^a (-1)^n \binom{2a+1}{a-n} \{ (2n+q+1)^{2b} l(2n+q+1) - (2n-q+1)^{2b} l(2n-q+1) \}$

31) $\int \cos qx \cdot \sin^{2a} x \frac{dx}{x^{2b-1}} = \frac{(-1)^b}{2^{2a} 1^{2b-3/1}} \left[\binom{2a}{a} q^{2b-2} lq + \sum_1^a (-1)^n \binom{2a}{a-n} \{ (2n+q)^{2b-2} l(2n+q) + (2n-q)^{2b-2} l(2n-q) \} \right]$

32) $\int \cos qx \cdot \sin^{2a+1} x \frac{dx}{x^{2b}} = \frac{(-1)^b}{2^{2a+1} 1^{2b-1/1}} \sum_0^a (-1)^n \binom{2a+1}{a-n} \{ (2n+q+1)^{2b-1} l(2n+q+1) + (2n-q+1)^{2b-1} l(2n-q+1) \}$

33) $\int \sin qx \cdot \sin^{2a} x \frac{dx}{x^{2b+2r-1}} = \frac{(-1)^{b-1} \pi \operatorname{Secr} \pi}{2^{2a+1} 1^{2b+2r-3/1}} \left[\binom{2a}{a} q^{2b+2r-2} + \sum_1^a (-1)^n \binom{2a}{a-n} \{ (2n+q)^{2b+2r-2} - (2n-q)^{2b+2r-2} \} \right]$

34) $\int \sin qx \cdot \sin^{2a+1} x \frac{dx}{x^{2b+2r}} = \frac{(-1)^{b-1} \pi \operatorname{Secr} \pi}{2^{2a+2} 1^{2b+2r-1/1}} \sum_0^a (-1)^n \binom{2a+1}{a-n} \{ (2n+q+1)^{2b+2r-1} - (2n-q+1)^{2b+2r-1} \}$

35) $\int \cos qx \cdot \sin^{2a} x \frac{dx}{x^{2b+2r-1}} = \frac{(-1)^b \pi \operatorname{Cosecr} \pi}{2^{2a+1} 1^{2b+2r-3/1}} \left[\binom{2a}{a} q^{2b+2r-2} + \sum_1^a (-1)^n \binom{2a}{a-n} \{ (2n+q)^{2b+2r-2} + (2n-q)^{2b+2r-2} \} \right]$

36) $\int \cos qx \cdot \sin^{2a+1} x \frac{dx}{x^{2b+2r}} = \frac{(-1)^b \pi \operatorname{Cosecr} \pi}{2^{2a+2} 1^{2b+2r-1/1}} \sum_0^a (-1)^n \binom{2a+1}{a-n} \{ (2n+q+1)^{2b+2r-1} + (2n-q+1)^{2b+2r-1} \}$

37) $\int \sin qx \cdot (1 - \cos^{2a} x) \frac{dx}{x^{2r+1}} = \frac{\pi \operatorname{Cosecr} \pi}{2^{2a+1} 1^{2r+1/1}} \sum_1^a \binom{2a}{a-n} \{ -2q^{2r+1} - (2n-q)^{2r+1} + (2n+q)^{2r+1} \}$

38) $\int \sin qx \cdot (1 - \cos^{2a+1} x) \frac{dx}{x^{2r+1}} = \frac{\pi \operatorname{Cosecr} \pi}{1^{2a+2} 1^{2r+1/1}} \sum_0^a \binom{2a+1}{a-n} \{ -2q^{2r+1} - (2n-q+1)^{2r+1} + (2n+q+1)^{2r+1} \}$

39) $\int \cos qx \cdot (1 - \cos^{2a} x) \frac{dx}{x^{2r+1}} = \frac{\pi \operatorname{Cosecr} \pi}{2^{2a+1} 1^{2r/1}} \sum_1^a \binom{2a}{a-n} \{ -2q^{2r} + (2n-q)^{2r} + (2n+q)^{2r} \}$

40) $\int \cos qx \cdot (1 - \cos^{2a+1} x) \frac{dx}{x^{2r+1}} = \frac{\pi \operatorname{Cosecr} \pi}{2^{2a+2} 1^{2r/1}} \sum_0^a \binom{2a+1}{a-n} \{ -2q^{2r} + (2n-q+1)^{2r} + (2n+q+1)^{2r} \}$

Dans 29) à 36) on a $a \geq b$.

Dans 33), 34), 37), 38) on a $r \leq \frac{1}{2}$.

Dans 35), 36), 39), 40) on a $0 < r < 1$. Sur 29) à 40) voyez Enneper, Schl. Z. 11, 251.

162. 35) $\int \sin^r x \cdot \sin\left(\frac{1}{2} \pi - r x\right) \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{r+1}} \{1 - (1 - e^{-2q})^r\}$ (H, 49).
- 36) $\int \sin^{2a} x \cdot \sin 2ax \frac{dx}{q^2 + x^2} = \frac{(-1)^a}{2^{2a+1} q} \sum_{n=0}^{2a} (-1)^n \binom{2a}{n} [e^{-2nq} \text{Ei}(2nq) - e^{2nq} \text{Ei}(-2nq)]$ (V, 31).
- 37) $\int \sin^{2a} x \cdot \sin 4ax \frac{dx}{q^2 + x^2} = \frac{(-1)^a}{2^{2a+1} q} \left[e^{-2aq} \sum_{n=0}^{2a} (-1)^n \binom{2a}{n} e^{-2nq} \text{Ei}\{2q(a+n)\} - e^{2aq} \sum_{n=0}^{2a} (-1)^n \binom{2a}{n} e^{2nq} \text{Ei}\{-2q(a+n)\} \right]$ (V, 37).
- 38) $\int \sin^{2a} x \cdot \sin 6ax \frac{dx}{q^2 + x^2} = \frac{(-1)^a}{2^{2a+1} q} \left[e^{-2aq} \sum_{n=0}^{2a} (-1)^n \binom{2a}{n} e^{-2nq} \text{Ei}\{2q(2a+n)\} - e^{2aq} \sum_{n=0}^{2a} (-1)^n \binom{2a}{n} e^{2nq} \text{Ei}\{-2q(2a+n)\} \right]$ (V, 38).
- 39) $\int \sin^{2a} x \cdot \sin 6ax \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} e^{-2aq} (1 - e^{-2q})^{2a}$ (V, 50).
- 40) $\int \sin^{2a+1} x \cdot \sin\{(2a+1)x\} \frac{x dx}{q^2 + x^2} = \infty$ (V, 31).
- 41) $\int \sin^{2a+1} x \cdot \sin\{(2a+1)2x\} \frac{dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1} q} e^{(2a+1)q} (1 - e^{-2q})^{2a+1}$ (V, 41).
- 42) $\int \sin^{2a+1} x \cdot \sin\{(2a+1)2x\} \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1}}{2^{2a+1}} \left[e^{(2a+1)q} \sum_{n=0}^{2a+1} (-1)^n \binom{2a+1}{n} e^{2nq} \text{Ei}\{-q(2a+2n+1)\} + e^{-(2a+1)q} \sum_{n=0}^{2a+1} (-1)^n \binom{2a+1}{n} e^{-2nq} \text{Ei}\{q(2a+2n+1)\} \right]$ (V, 49).
- 43) $\int \sin^{2a+1} x \cdot \sin\{(2a+1)3x\} \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1}}{2^{2a+1}} \left[e^{(2a+1)q} \sum_{n=0}^{2a+1} (-1)^n \binom{2a+1}{n} e^{2nq} \text{Ei}\{-2q(2a+n+1)\} + e^{-(2a+1)q} \sum_{n=0}^{2a+1} (-1)^n \binom{2a+1}{n} e^{-2nq} \text{Ei}\{2q(2a+n+1)\} \right]$ (V, 49).
- 44) $\int \sin^r x \cdot \cos\left(\frac{1}{2} \pi - r x\right) \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{r+1} q} (1 - e^{-2q})^r$ (H, 49).
- 45) $\int \sin^{2a} x \cdot \cos 2ax \frac{x dx}{q^2 + x^2} = \infty$ (V, 31).
- 46) $\int \sin^{2a} x \cdot \cos 4ax \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1}}{2^{2a+1}} \left[e^{2aq} \sum_{n=0}^{2a} (-1)^n \binom{2a}{n} e^{2nq} \text{Ei}\{-2q(a+n)\} + e^{-2aq} \sum_{n=0}^{2a} (-1)^n \binom{2a}{n} e^{-2nq} \text{Ei}\{2q(a+n)\} \right]$ (V, 48).
- 47) $\int \sin^{2a} x \cdot \cos 6ax \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1}}{2^{2a+1}} \left[e^{2aq} \sum_{n=0}^{2a} (-1)^n \binom{2a}{n} e^{2nq} \text{Ei}\{-2q(2a+n)\} + e^{-2aq} \sum_{n=0}^{2a} (-1)^n \binom{2a}{n} e^{-2nq} \text{Ei}\{2q(2a+n)\} \right]$ (V, 49).

$$48) \int \sin^{2a} x \cdot \cos 2ax \frac{dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} e^{-2aq} (1 - e^{-2q})^{2a} \quad (\text{V, 40}).$$

$$49) \int \sin^{2a+1} x \cdot \cos \{(2a+1)x\} \frac{dx}{q^2 + x^2} = \frac{(-1)^{a-1} 2^{a+1}}{2^{2a+1} q} \sum_0^{2a+1} (-1)^n \binom{2a+1}{n} [e^{-2nq} Ei(2nq) - e^{2nq} Ei(-2nq)] \quad (\text{V, 31}).$$

$$50) \int \sin^{2a+1} x \cdot \cos \{(2a+1)2x\} \frac{dx}{q^2 + x^2} = \frac{(-1)^{a-1}}{2^{2a+1} q} \left[e^{-(2a+1)q} \sum_0^{2a+1} (-1)^n \binom{2a+1}{n} e^{-2nq} Ei\{q(2a+2n+1)\} - e^{(2a+1)q} \sum_0^{2a+1} (-1)^n \binom{2a+1}{n} e^{2nq} Ei\{-q(2a+2n+1)\} \right] \quad (\text{V, 38}).$$

$$51) \int \sin^{2a+1} x \cdot \cos \{(2a+1)3x\} \frac{dx}{q^2 + x^2} = \frac{(-1)^{a-1}}{2^{2a+1} q} \left[e^{-(2a+1)3q} \sum_0^{2a+1} (-1)^n \binom{2a+1}{n} e^{-2nq} Ei\{2q(2a+n+1)\} - e^{(2a+1)3q} \sum_0^{2a+1} (-1)^n \binom{2a+1}{n} e^{2nq} Ei\{-2q(2a+n+1)\} \right] \quad (\text{V, 38}).$$

$$52) \int \sin^{2a+1} x \cdot \cos \{(2a+1)3x\} \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1}} e^{-(2a+1)q} (1 - e^{-2q})^{2a+1} \quad (\text{V, 50}).$$

$$53) \int \sin^{2a+1} x \cdot \cos 2ax \frac{dx}{q^2 + x^2} = \frac{(-1)^{a-1}}{2^{2a+1} q} \left[e^{2q} \sum_0^{2a+1} (-1)^n \binom{2a+1}{n} e^{-2nq} Ei\{q(2n-1)\} - e^{-2q} \sum_0^{2a+1} (-1)^n \binom{2a+1}{n} e^{2nq} Ei\{q(1-2n)\} \right] \quad (\text{V, 38}).$$

$$164. \quad 23) \int \sin^{2a} x \cdot \sin 2ax \cdot \sin px \frac{x dx}{q^2 + x^2} = \frac{(-1)^a}{2^{2a+1}} \left[e^{pq} \sum_0^{2a} (-1)^n \binom{2a}{n} [e^{2nq} \text{Ei}\{-q(p+2n)\} - e^{-2nq} \text{Ei}\{q(2n-p)\}] - e^{-pq} \sum_0^{2a} (-1)^n \binom{2a}{n} [e^{2nq} \text{Ei}\{q(p-2n)\} - e^{-2nq} \text{Ei}\{q(p+2n)\}] \right] \quad (\text{V}, 45).$$

$$24) \int \sin^{2a+1} x \cdot \sin \{(2a+1)x\} \cdot \sin \{(2a+1)2x\} \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1}} [(1 - e^{-(2a+1)q}) (1 - e^{-2q})^{2a+1} + 1] \quad (\text{V}, 44).$$

$$25) \int \sin^{2a+1} x \cdot \sin \{(2a+1)x\} \cdot \sin px \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} e^{-pq} (1 - e^{(2a+1)q}) (1 - e^{-2q})^{2a+1} [p > 4a+2], = \frac{(-1)^a \pi}{2^{2a+1}} \left[(e^{-pq} - e^{pq}) (1 - e^{-2q})^{2a+1} + e^{pq} \sum_0^d (-1)^n \binom{2a+1}{n} e^{-2nq} + e^{-pq} \sum_0^d (-1)^n \binom{2a+1}{n} e^{2nq} \right] [p < 4a+2, \text{fractionn.}], = \frac{(-1)^a \pi}{2^{2a+1}} \left[(e^{-pq} - e^{pq}) (1 - e^{-2q})^{2a+1} + e^{pq} \sum_0^{d-1} (-1)^n \binom{2a+1}{n} e^{-2nq} + e^{-pq} \sum_0^d (-1)^n \binom{2a+1}{n} e^{2nq} \right] [p < 4a+2, \text{ent.}] \left[d = \mathcal{C} \frac{1}{2} p \right] \quad (\text{V}, 44).$$

$$26) \int \sin^{2a+1} x \cdot \sin \{(2a+1)x\} \cdot \sin px \frac{dx}{q^2 + x^2} = \frac{(-1)^a}{2^{2a+1} q} \left[e^{-pq} \sum_0^{2a+1} (-1)^n \binom{2a+1}{n} [e^{2nq} \text{Ei}\{q(p-2n)\} + e^{-2nq} \text{Ei}\{q(p+2n)\}] - e^{pq} \sum_0^{2a+1} (-1)^n \binom{2a+1}{n} [e^{2nq} \text{Ei}\{-q(p+2n)\} + e^{-2nq} \text{Ei}\{q(2n-p)\}] \right] \quad (\text{V}, 34).$$

$$27) \int \sin^{2a} x \cdot \sin 2ax \cdot \cos 4ax \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1}} [(1 - e^{-(2a)q}) (1 - e^{-2q})^{2a} - 1] \quad (\text{V}, 47).$$

$$28) \int \sin^{2a} x \cdot \sin 2ax \cdot \cos px \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+2}} e^{-pq} (1 - e^{2aq}) (1 - e^{-2q})^{2a} [p > 4a], = \frac{(-1)^a \pi}{2^{2a+2}} \left[(e^{pq} + e^{-pq}) (1 - e^{-2q})^{2a} - e^{pq} \sum_0^d (-1)^n \binom{2a}{n} e^{-2nq} - e^{-pq} \sum_0^d (-1)^n \binom{2a}{n} e^{2nq} \right] [p < 4a, \text{fract.}], = \frac{(-1)^a \pi}{2^{2a+2}} \left[(e^{pq} + e^{-pq}) (1 - e^{-2q})^{2a} - e^{pq} \sum_0^{d-1} (-1)^n \binom{2a}{n} e^{-2nq} - e^{-pq} \sum_0^d (-1)^n \binom{2a}{n} e^{2nq} \right] [p < 4a, \text{entier}] \left[d = \mathcal{C} \frac{1}{2} p \right] \quad (\text{V}, 45, 46).$$

$$29) \int \sin^{2a} x \cdot \sin 2ax \cdot \cos px \frac{dx}{q^2 + x^2} = \frac{(-1)^{a-1}}{2^{2a+1} q} \left[e^{-pq} \sum_0^{2a} (-1)^n \binom{2a}{n} [e^{2nq} \text{Ei}\{q(p-2n)\} - e^{-2nq} \text{Ei}\{q(p+2n)\}] + e^{pq} \sum_0^{2a} (-1)^n \binom{2a}{n} [e^{2nq} \text{Ei}\{-q(p+2n)\} - e^{-2nq} \text{Ei}\{q(2n-p)\}] \right] \quad (\text{V}, 35).$$

- 30) $\int \sin^{2a+1} x \cdot \sin \{(2a+1)x\} \cdot \cos px \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1}}{2^{2a+1}} \left[e^{pq} \sum_0^{2a+1} (-1)^n \binom{2a+1}{n} \right.$
 $\left. [e^{2nq} Ei\{-q(p+2n)\} + e^{-2nq} Ei\{q(2n-p)\}] + e^{-pq} \sum_0^{2a+1} (-1)^n \binom{2a+1}{n} \right.$
 $\left. [e^{2nq} Ei\{q(p-2n)\} + e^{-2nq} Ei\{q(p+2n)\}] \right] \quad (V, 45).$
- 31) $\int \sin^s rx \cdot \sin \left(\frac{1}{2} s\pi - srx \right) \cdot \operatorname{Tg} 2rx \frac{dx}{q^2 + x^2} = -\frac{\pi}{2^{s+1}q} \frac{1 + e^{-1qr}}{1 + e^{-1qr}} (1 - e^{-1qr})^{s+1} \quad (H, 148).$
- 32) $\int \sin^s rx \cdot \sin \left(\frac{1}{2} s\pi - srx \right) \cdot \operatorname{Cot} 2rx \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{s+1}q} \frac{1 + e^{-1qr}}{1 + e^{-1qr}} (1 - e^{-1qr})^{s-1} \quad (H, 148).$
- 33) $\int \sin^{s-1} rx \cdot \sin \left\{ (s-1) \frac{1}{2} \pi - (s+1)rx \right\} \cdot \operatorname{Tg} 2rx \frac{dx}{q^2 + x^2} = \frac{\pi}{2^s q} \frac{1 + e^{-1qr}}{e^{2qr} + e^{-2qr}} (1 - e^{-2qr})^s$
 $(H, 169).$
- 34) $\int \sin^{s-1} rx \cdot \sin \left\{ (s-1) \frac{1}{2} \pi - (s+1)rx \right\} \cdot \operatorname{Cot} 2rx \frac{dx}{q^2 + x^2} = \frac{\pi}{2^s q} \frac{1 + e^{-1qr}}{1 + e^{-2qr}}$
 $(1 - e^{-2qr})^{s-2} e^{-1qr} \quad (H, 169).$
- 35) $\int \sin^{2a} x \cdot \cos 2ax \cdot \sin 4ax \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} [(1 + e^{-1aq})(1 - e^{-1q})^{2a} - 1] \quad (V, 44).$
- 36) $\int \sin^{2a} x \cdot \cos 2ax \cdot \sin px \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} e^{-pq} (1 + e^{-1aq})(1 - e^{-2q})^{2a} [p > 4a], =$
 $= \frac{(-1)^a \pi}{2^{2a+1}} \left[(e^{-pq} - e^{pq})(1 - e^{-2q})^{2a} + e^{pq} \sum_0^d (-1)^n \binom{2a}{n} e^{-2nq} + e^{-pq} \sum_0^d (-1)^n \right.$
 $\left. \binom{2a}{n} e^{2nq} \right] [p < 4a, \text{fractionn.}], = \frac{(-1)^a \pi}{2^{2a+1}} \left[(e^{-pq} - e^{pq})(1 - e^{-2q})^{2a} + e^{pq} \sum_0^{d-1} (-1)^n \right.$
 $\left. \binom{2a}{n} e^{-2nq} + e^{-pq} \sum_0^d (-1)^n \binom{2a}{n} e^{2nq} \right] [p < 4a, \text{entier}] \left[d = \mathcal{C} \frac{1}{2} p \right] \quad (V, 43).$
- 37) $\int \sin^{2a} x \cdot \cos 2ax \cdot \sin px \frac{dx}{q^2 + x^2} = \frac{(-1)^a}{2^{2a+1}q} \left[e^{-pq} \sum_0^{2a} (-1)^n \binom{2a}{n} [e^{2nq} Ei\{q(p-2n)\} + \right.$
 $\left. + e^{-2nq} Ei\{q(p+2n)\}] - e^{pq} \sum_0^{2a} (-1)^n \binom{2a}{n} [e^{2nq} Ei\{-q(p+2n)\} + e^{-2nq} Ei\{q(2n-p)\}] \right]$
 $(V, 34).$
- 38) $\int \sin^{2a+1} x \cdot \cos \{(2a+1)x\} \cdot \sin px \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1}}{2^{2a+1}} \left[e^{pq} \sum_0^{2a+1} (-1)^n \binom{2a+1}{n} \right.$
 $\left. [e^{2nq} Ei\{-q(p+2n)\} - e^{-2nq} Ei\{q(2n-p)\}] - e^{-pq} \sum_0^{2a+1} (-1)^n \binom{2a+1}{n} \right.$
 $\left. [e^{2nq} Ei\{q(p-2n)\} - e^{-2nq} Ei\{q(p+2n)\}] \right] \quad (V, 45).$

$$164. \quad 39) \int \sin^{2a} x \cdot \cos 2ax \cdot \cos px \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1}}{2^{2a+1}} \left[e^{pq} \sum_0^{2a} (-1)^n \binom{2a}{n} [e^{2nq} Ei\{-q(p+2n)\} + \right. \\ \left. + e^{-2nq} Ei\{q(2n-p)\}] + e^{-pq} \sum_0^{2a} (-1)^n \binom{2a}{n} [e^{2nq} Ei\{q(p-2n)\} + \right. \\ \left. + e^{-2nq} Ei\{q(p+2n)\}] \right] \quad (V, 45).$$

$$40) \int \sin^{2a+1} x \cdot \cos\{(2a+1)x\} \cdot \cos\{(2a+1)2x\} \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1}} \left\{ (1 + e^{-(2a+1)q}) \right. \\ \left. (1 - e^{-2q})^{2a+1} + 1 \right\} \quad (V, 47).$$

$$41) \int \sin^{2a+1} x \cdot \cos\{(2a+1)x\} \cdot \cos px \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+1}} e^{-pq} (1 + e^{(2a+1)q}) (1 - e^{-2q})^{2a+1} \\ [p > 4a+2], = \frac{(-1)^{a-1} \pi}{2^{2a+1}} \left[(e^{pq} + e^{-pq}) (1 - e^{-2q})^{2a+1} - e^{pq} \sum_0^d (-1)^n \binom{2a+1}{n} e^{-2nq} - \right. \\ \left. - e^{-pq} \sum_0^d (-1)^n \binom{2a+1}{n} e^{2nq} \right] [p < 4a+2, \text{fractionn.}], = \frac{(-1)^{a-1} \pi}{2^{2a+1}} \left[(e^{pq} + e^{-pq}) \right. \\ \left. (1 - e^{-2q})^{2a+1} - e^{pq} \sum_0^{d-1} (-1)^n \binom{2a+1}{n} e^{-2nq} - e^{-pq} \sum_0^d (-1)^n \binom{2a+1}{n} e^{2nq} \right] \\ [p < 4a+2, \text{entier}] \quad \left[d = \mathcal{L} \frac{1}{2} p \right] \quad (V, 46, 47).$$

$$42) \int \sin^{2a+1} x \cdot \cos\{(2a+1)x\} \cdot \cos px \frac{dx}{q^2 + x^2} = \frac{(-1)^a}{2^{2a+1} q} \left[e^{-pq} \sum_0^{2a+1} (-1)^n \binom{2a+1}{n} \right. \\ \left. [e^{2nq} Ei\{q(p-2n)\} - e^{-2nq} Ei\{q(p+2n)\}] + e^{pq} \sum_0^{2a+1} (-1)^n \binom{2a+1}{n} \right. \\ \left. [e^{2nq} Ei\{-q(p+2n)\} - e^{-2nq} Ei\{q(2n-p)\}] \right] \quad (V, 36).$$

$$43) \int \sin^s rx \cdot \cos\left(\frac{1}{2} s\pi - srx\right) \cdot \operatorname{Tg} 2rx \frac{x dx}{q^2 + x^2} = -\frac{\pi}{2^{s+1}} \frac{1 + e^{-2qr}}{1 + e^{-4qr}} (1 - e^{-2qr})^{s+1} \quad (H, 148).$$

$$44) \int \sin^s rx \cdot \cos\left(\frac{1}{2} s\pi - srx\right) \cdot \operatorname{Cot} 2rx \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{s+1}} \frac{1 + e^{-4qr}}{1 + e^{-2qr}} (1 - e^{-2qr})^{s-1} \quad (H, 148).$$

$$45) \int \sin^{s-1} rx \cdot \cos\left\{\frac{1}{2} (s-1)\pi - (s+1)rx\right\} \cdot \operatorname{Tg} 2rx \frac{x dx}{q^2 + x^2} = -\frac{\pi}{2^s} \frac{1 + e^{-2qr}}{e^{2qr} + e^{-2qr}} (1 - e^{-2qr})^s \\ (H, 169).$$

$$46) \int \sin^{s-1} rx \cdot \cos\left\{\frac{1}{2} (s-1)\pi - (s+1)rx\right\} \cdot \operatorname{Cot} 2rx \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^s} \frac{1 + e^{-4qr}}{1 + e^{-2qr}} \\ (1 - e^{-2qr})^{s-2} e^{-2qr} \quad (H, 169).$$

$$47) \int \cos^a x \cdot \sin ax \cdot \cos 2ax \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{a+1}} [(e^{-2aq} - 1)(1 + e^{-2q})^a + 1] \quad (V, 25).$$

$$48) \int \cos^a x \cdot \cos ax \cdot \sin 2ax \frac{x dx}{q^2 + x^2} = \frac{\pi}{2^{a+1}} [(1 + e^{-2aq})(1 + e^{-2q})^a - 1] \quad (V, 24).$$

$$\text{T. 166. } 30) \int \sin^s rx \cdot \sin \left(\frac{1}{2} s \pi - srx \right) \cdot \text{Tg } 2rx \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \sin^s qr \cdot \text{Tg } 2qr \cdot \cos \left(\frac{1}{2} s \pi - sqr \right) \quad (\text{H, 148}).$$

$$31) \int \sin^s rx \cdot \sin \left(\frac{1}{2} s \pi - srx \right) \cdot \text{Cot } 2rx \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \sin^s qr \cdot \text{Cot } 2qr \cdot \cos \left(\frac{1}{2} s \pi - sqr \right) \quad (\text{H, 148}).$$

$$32) \int \sin^{s-1} rx \cdot \sin \left\{ (s-1) \frac{1}{2} \pi - (s+1) rx \right\} \cdot \text{Tg } 2rx \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \sin^{s-1} qr \cdot \text{Tg } 2qr \cdot \cos \left\{ (s-1) \frac{1}{2} \pi - (s+1) qr \right\} \quad (\text{H, 171}).$$

$$33) \int \sin^{s-1} rx \cdot \sin \left\{ (s-1) \frac{1}{2} \pi - (s+1) rx \right\} \cdot \text{Cot } 2rx \frac{dx}{q^2 - x^2} = \frac{\pi}{2q} \sin^{s-1} qr \cdot \text{Cot } 2qr \cdot \cos \left\{ (s-1) \frac{1}{2} \pi - (s+1) qr \right\} \quad (\text{H, 171}).$$

$$34) \int \sin^s rx \cdot \cos \left(\frac{1}{2} s \pi - srx \right) \cdot \text{Tg } 2rx \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} \sin^s qr \cdot \text{Tg } 2qr \cdot \sin \left(\frac{1}{2} s \pi - sqr \right) \quad (\text{H, 148}).$$

$$35) \int \sin^s rx \cdot \cos \left(\frac{1}{2} s \pi - srx \right) \cdot \text{Cot } 2rx \frac{x dx}{q^2 - x^2} = -\frac{\pi}{2} \sin^s qr \cdot \text{Cot } 2qr \cdot \sin \left(\frac{1}{2} s \pi - sqr \right) \quad (\text{H, 148}).$$

$$36) \int \sin^{s-1} rx \cdot \cos \left\{ (s-1) \frac{1}{2} \pi - (s+1) rx \right\} \cdot \text{Tg } 2rx \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \sin^{s-1} qr \cdot \text{Tg } 2qr \cdot \sin \left\{ (s-1) \frac{1}{2} \pi - (s+1) qr \right\} \quad (\text{H, 171}).$$

$$37) \int \sin^{s-1} rx \cdot \cos \left\{ (s-1) \frac{1}{2} \pi - (s+1) rx \right\} \cdot \text{Cot } 2rx \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \sin^{s-1} qr \cdot \text{Cot } 2qr \cdot \sin \left\{ (s-1) \frac{1}{2} \pi - (s+1) qr \right\} \quad (\text{H, 171}).$$

$$\text{T. 180. } 21) \int \frac{\sin \{(2a-1)px\}}{\sin px} \sin^{2b} 2ax \frac{dx}{x^2} = \frac{a\pi}{2^{2b-1}} \left\{ -\frac{a-1}{2} \binom{2b}{b} p + 2(2a-1) \sum_1^b (-1)^n \binom{2b}{b-n} n \right\}$$

$$22) \int \frac{\sin 2apx}{\sin px} \sin^{2b} 2ax \frac{dx}{x^2} = \frac{a\pi}{2^{2b-1}} \left\{ -\frac{a}{2} \binom{2b}{b} p + 4a \sum_1^b (-1)^n \binom{2b}{b-n} n \right\}$$

$$23) \int \frac{\cos \{(4a-1)px\}}{\cos px} \sin^{2b} 4ax \frac{dx}{x^2} = \frac{a\pi}{2^{2b-1}} \left\{ \frac{p}{2} \binom{2b}{b} + 2 \sum_1^b (-1)^n \binom{2b}{b-n} n \right\}$$

Sur 21) à 23) v. Enneper, Schl. Z. 11, 251.

T. 172. 23) $\int \sin^s rx \cdot \sin \left(\frac{1}{2} s \pi - tx \right) \frac{dx}{x(q^2 + x^2)} = \frac{\pi}{2^{s+1} q^2} (e^{qr} - e^{-qr})^s e^{-qt} \quad (\text{H, 163}).$

24) $\int \sin^s rx \cdot \sin \left(\frac{1}{2} s \pi - tx \right) \frac{dx}{x(q^2 - x^2)} = \frac{\pi}{2 q^2} \sin^s qr \cdot \cos \left(\frac{1}{2} s \pi - qt \right) \quad (\text{H, 164}).$

25) $\int \sin^s rx \cdot \sin \left(\frac{1}{2} s \pi - tx \right) \frac{dx}{x(4q^4 + x^4)} = \frac{\pi}{2^{s+3} q^4} (e^{2qr} - 2 \cos 2qr + e^{-2qr})^{\frac{s}{2}} e^{-qt} \cos \left\{ s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} - \cos 2qr} \right) + q(t - sr) \right\} \quad (\text{H, 163}).$

26) $\int \sin^s rx \cdot \sin \left(\frac{1}{2} s \pi - tx \right) \frac{dx}{x(q^4 - x^4)} = \frac{\pi}{4 q^4} \left\{ 2^{-s} (e^{qr} - e^{-qr})^s e^{-qt} + \sin^s qr \cdot \cos \left(\frac{1}{2} s \pi - qt \right) \right\} \quad (\text{H, 164}).$

27) $\int \cos^s rx \cdot \sin tx \frac{dx}{x(q^2 + x^2)} = -\frac{\pi}{2^{s+1} q^2} (e^{qr} + e^{-qr})^s e^{-qt} \quad (\text{H, 163}).$

28) $\int \cos^s rx \cdot \sin tx \frac{dx}{x(q^2 - x^2)} = -\frac{\pi}{2 q^2} \cos^s qr \cdot \cos qt \quad (\text{H, 164}).$

29) $\int \cos^s rx \cdot \sin tx \frac{dx}{x(4q^4 + x^4)} = -\frac{\pi}{2^{s+3} q^4} (e^{2qr} + 2 \cos 2qr + e^{-2qr})^{\frac{s}{2}} e^{-qt} \cos \left\{ s \operatorname{Arctg} \left(\frac{\sin 2qr}{e^{2qr} + \cos 2qr} \right) - q(t - sr) \right\} \quad (\text{H, 163}).$

30) $\int \cos^s rx \cdot \sin tx \frac{dx}{x(q^4 - x^4)} = -\frac{\pi}{4 q^4} \left\{ 2^{-s} (e^{qr} + e^{-qr})^s e^{-qt} + \cos^s qr \cdot \cos qt \right\} \quad (\text{H, 163}).$

Dans 23) à 30) on a $t > sr$.

T. 175. 18) $\int \cos px \frac{dx}{x^2(x^2 + 2^2)(x^2 + 4^2) \dots (x^2 + 4a^2)} = \frac{(-1)^a \pi}{2^{2a+1} 1^{2a+1}} \sum_0^a (-1)^n \binom{2a}{n} \frac{1}{a-n} e^{2(2n-1)a} \quad (\text{VIII, 434}).$

T. 191. 30) $\int \frac{\sin^{s-2} rx}{\cos rx} \sin \left\{ (s-1) \frac{1}{2} \pi - (s+1) rx \right\} \frac{dx}{q^2 + x^2} = \frac{\pi e^{-2qr}}{2^{s-2} q} \frac{(1 - e^{-2qr})^{s-1}}{1 + e^{-2qr}} \quad (\text{H, 169}).$

31) $\int \frac{\sin^{s-2} rx}{\cos rx} \cos \left\{ (s-1) \frac{1}{2} \pi - (s+1) rx \right\} \frac{x dx}{q^2 + x^2} = \frac{\pi e^{-2qr}}{2^{s-1}} \frac{(1 - e^{-2qr})^{s-1}}{1 + e^{-2qr}} \quad (\text{H, 169}).$

32) $\int \frac{\sin^{s-2} rx}{\cos rx} \sin \left\{ (s-1) \frac{1}{2} \pi - (s+1) rx \right\} \frac{dx}{q^2 - x^2} = \frac{\pi}{2 q} \frac{\sin^{s-2} qr}{\cos qr} \cos \left\{ (s-1) \frac{1}{2} \pi - (s+1) qr \right\} \quad (\text{H, 171}).$

33) $\int \frac{\sin^{s-2} rx}{\cos rx} \cos \left\{ (s-1) \frac{1}{2} \pi - (s+1) rx \right\} \frac{x dx}{q^2 - x^2} = \frac{\pi}{2} \frac{\sin^{s-2} qr}{\cos qr} \sin \left\{ (s-1) \frac{1}{2} \pi - (s+1) qr \right\} \quad (\text{H, 171}).$

$$\text{T. 204. } 35) \int \frac{\cos x - 2 \cos 2x \cdot (\cos x + p \sin x)}{\sqrt{\cos x + p \sin x^3}} \frac{x dx}{\sin x \cdot \sqrt{\sin x}} = \frac{4}{\sqrt{p}} l \{ \sqrt{p} + \sqrt{1+p} \} - \frac{\pi}{\sqrt{1+p}} \quad (\text{VIII, 589*}).$$

$$36) \int \frac{\cos x - 2 \cos 2x \cdot (\cos x - p \sin 2x)}{\sqrt{\cos x - p \sin x^3}} \frac{x dx}{\sin x \cdot \sqrt{\sin x}} = \frac{4}{\sqrt{p}} \operatorname{Arcsin}(\sqrt{p}) - \frac{\pi}{\sqrt{1-p}} \quad (\text{VIII, 589*}).$$

$$\text{T. 224. } 11) \int \frac{x dx}{\cos(p-x) \cdot \cos x} = p \operatorname{Cosec} p \cdot l \operatorname{Sec} p \quad (\text{VIII, 338}).$$

$$\text{T. 226. } 6) \int_q^\infty \sin px \frac{dx}{x} = \frac{\pi}{2} - \operatorname{Si}(pq) \quad (\text{VIII, 289}).$$

$$\text{T. 269. } 10) \int e^{-q^2 x^2} \cos px dx = \frac{1}{q} e^{-\frac{p^2}{4q^2}} \sqrt{\pi} \quad (\text{VIII, 516*}).$$

$$\text{T. 278. } 18) \int e^{p \cos x} \cos(p \sin x) \frac{\sin \{(2a+1)x\}}{\sin x} dx = \frac{\pi}{p} \left[1 + \sum_0^a \frac{p^{2a-2n}}{1^{2a-2n-1/1}} \right] \quad \text{Vernier, A. M. 15, 165.}$$

$$\text{T. 325. } 13) \int l(1-p^2+p^2 \cos^4 x) \frac{dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{2} F'(p) \cdot l \frac{4(1-p^2)^2}{p} - \frac{\pi}{4} F'(\sqrt{1-p^2})$$

Enneper, Schl. Z. 11, 74.

$$\text{T. 330. } 19) \int l \sin x \cdot dx = -\pi l 2 \quad (\text{VIII, 257}). \quad 20) \int l((\sin x)) \cdot dx = -\pi l 2 + 2a\pi^2 i \quad (\text{VIII, 258}).$$

$$21) \int l((- \sin x)) \cdot dx = -\pi l 2 + (2a+1)\pi^2 i \quad (\text{VIII, 258}).$$

$$22) \int l \cos^2 x \cdot dx = -2\pi l 2 \quad (\text{VIII, 257}). \quad 23) \int l \operatorname{Tg}^2 x \cdot dx = 0 \quad (\text{VIII, 257}).$$

$$\text{T. 332. } 11) \int l \left\{ \frac{1+2p \cos x + p^2}{1-2p \cos x + p^2} \right\} \cdot \sin \{(2a+1)x\} dx = 2\pi p^{2a+1} \frac{(-1)^a}{2a+1} \quad (\text{VIII, 277}).$$

T. 371. 8) $\int e^{-px} \sin qx \cdot \sin^{2a} x \frac{dx}{x^{2b+2r-1}} = \frac{\pi \operatorname{Cosec} 2r\pi}{2^{2a} \Gamma(2b+2r-1)} \left(\binom{2a}{a} (p^2 + q^2)^{b+r-1} \sin \left\{ (b+r-1) 2 \operatorname{Arctg} \frac{q}{p} \right\} + \sum_1^a (-1)^{n-1} \binom{2a}{a-n} \left[\{p^2 + (2n-q)^2\}^{b+r-1} \sin \left\{ (b+r-1) 2 \operatorname{Arctg} \left(\frac{2n-q}{p} \right) \right\} - \{p^2 + (2n+q)^2\}^{b+r-1} \sin \left\{ (b+r-1) 2 \operatorname{Arctg} \left(\frac{2n+q}{p} \right) \right\} \right] \right)$

9) $\int e^{-px} \sin qx \cdot \sin^{2a+1} x \frac{dx}{x^{2b+2r}} = \frac{\pi \operatorname{Cosec} 2r\pi}{2^{2a+1} \Gamma(2b+2r)} \sum_0^a (-1)^n \binom{2a+1}{a-n} \left[\{p^2 + (2n-q+1)^2\}^{b+r-\frac{1}{2}} \cos \left\{ (2b+2r-1) \operatorname{Arctg} \left(\frac{2n-q+1}{p} \right) \right\} - \{p^2 + (2n+q+1)^2\}^{b+r-\frac{1}{2}} \cos \left\{ (2b+2r-1) \operatorname{Arctg} \left(\frac{2n+q+1}{p} \right) \right\} \right]$

10) $\int e^{-px} \cos qx \cdot \sin^{2a} x \frac{dx}{x^{2b+2r-1}} = \frac{\pi \operatorname{Cosec} 2r\pi}{2^{2a} \Gamma(2b+2r-1)} \left(-\binom{2a}{a} (p^2 + q^2)^{b+r-1} \cos \left\{ (b+r-1) 2 \operatorname{Arctg} \frac{q}{p} \right\} + \sum_1^a (-1)^{n-1} \binom{2a}{a-n} \left[\{p^2 + (2n-q)^2\}^{b+r-1} \cos \left\{ (b+r-1) 2 \operatorname{Arctg} \left(\frac{2n-q}{p} \right) \right\} + \{p^2 + (2n+q)^2\}^{b+r-1} \cos \left\{ (b+r-1) 2 \operatorname{Arctg} \left(\frac{2n+q}{p} \right) \right\} \right] \right)$

11) $\int e^{-px} \cos qx \cdot \sin^{2a+1} x \frac{dx}{x^{2b+2r}} = \frac{\pi \operatorname{Cosec} 2r\pi}{2^{2a+1} \Gamma(2b+2r)} \sum_0^a (-1)^n \binom{2a+1}{a-n} \left[\{p^2 + (2n-q+1)^2\}^{b+r-\frac{1}{2}} \sin \left\{ (2b+2r-1) \operatorname{Arctg} \left(\frac{2n-q+1}{p} \right) \right\} + \{p^2 + (2n+q+1)^2\}^{b+r-\frac{1}{2}} \sin \left\{ (2b+2r-1) \operatorname{Arctg} \left(\frac{2n+q+1}{p} \right) \right\} \right]$

12) $\int e^{-px} \sin qx \cdot (1 - \cos^{2a} x) \frac{dx}{x^{2r+1}} = \frac{\pi \operatorname{Cosec} 2r\pi}{2^{2a} \Gamma(2r+2)} \sum_1^a \binom{2a}{a-n} \left[-2(p^2 + q^2)^{\frac{2r+1}{2}} \sin \left\{ (2r+1) \operatorname{Arctg} \frac{q}{p} \right\} - \{p^2 + (2n-q)^2\}^{\frac{2r+1}{2}} \sin \left\{ (2r+1) \operatorname{Arctg} \left(\frac{2n-q}{p} \right) \right\} + \{p^2 + (2n+q)^2\}^{\frac{2r+1}{2}} \sin \left\{ (2r+1) \operatorname{Arctg} \left(\frac{2n+q}{p} \right) \right\} \right]$

13) $\int e^{-px} \sin qx \cdot (1 - \cos^{2a+1} x) \frac{dx}{x^{2r+1}} = \frac{\pi \operatorname{Cosec} 2r\pi}{2^{2a+1} \Gamma(2r+2)} \sum_0^a \binom{2a+1}{a-n} \left[-2(p^2 + q^2)^{\frac{2r+1}{2}} \cos \left\{ (2r+1) \operatorname{Arctg} \frac{q}{p} \right\} - \{p^2 + (2n-q+1)^2\}^{\frac{2r+1}{2}} \cos \left\{ 2r \operatorname{Arctg} \left(\frac{2n-q+1}{p} \right) \right\} + \{p^2 + (2n+q+1)^2\}^{\frac{2r+1}{2}} \cos \left\{ 2r \operatorname{Arctg} \left(\frac{2n+q+1}{p} \right) \right\} \right]$

$$14) \int e^{-px} \cos qx \cdot (1 - \cos^{2a} x) \frac{dx}{x^{2r+1}} = \frac{\pi \operatorname{Cosec} 2r\pi}{2^{2a} \Gamma(2r+1)} \sum_1^a \binom{2a}{a-n} \left[-2(p^2 + q^2)^r \cos \left\{ 2r \operatorname{Arctg} \frac{q}{p} \right\} + \right. \\ \left. + \{p^2 + (2n - q)^2\}^r \cos \left\{ 2r \operatorname{Arctg} \left(\frac{2n - q}{p} \right) \right\} + \{p^2 + (2n + q)^2\}^r \cos \left\{ 2r \operatorname{Arctg} \left(\frac{2n + q}{p} \right) \right\} \right]$$

$$15) \int e^{-px} \cos qx \cdot (1 - \cos^{2a+1} x) \frac{dx}{x^{2r+1}} = \frac{\pi \operatorname{Cosec} 2r\pi}{2^{2a+1} \Gamma(2r+1)} \sum_0^a \binom{2a+1}{a-n} \left[-2(p^2 + q^2)^r \sin \left(2r \operatorname{Arctg} \frac{q}{p} \right) + \{p^2 + (2n - q + 1)^2\}^r \sin \left\{ (2r+1) \operatorname{Arctg} \left(\frac{2n - q + 1}{p} \right) \right\} + \right. \\ \left. + \{p^2 + (2n + q + 1)^2\}^r \sin \left\{ (2r+1) \operatorname{Arctg} \left(\frac{2n + q + 1}{p} \right) \right\} \right]$$

Dans 8) à 11) on a $\underline{a} \geq \underline{b}$, $0 \leq r < \frac{1}{2}$; dans 12) à 15) on a $0 \leq r < \frac{1}{2}$.

Sur 8) à 15) voyez Enneper, Schl. Z. 11, 251.

T. 344. 25) $\int \operatorname{Arctg} \left(\frac{1+p \sin^2 x}{1-p \sin^2 x} \sqrt{\frac{1-\sqrt{1-p^2}}{1+\sqrt{1-p^2}}} \right) \frac{dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{\pi}{4} F'(p)$ Enneper, Schl. Z. 11, 74.

T. 351. 11) $\int_0^{\frac{\pi}{2}} E(p \sin x) \frac{\sin x}{\sqrt{1-p^2 \sin^2 x}} dx = \frac{\pi}{2 \sqrt{1-p^2}}$ (VIII, 478).

12) $\int_0^{\frac{\pi}{2}} \Gamma(p, x) \frac{dx}{\sqrt{1-p^2 \sin^2 x}} = \frac{1}{6} E'(p) \cdot \{F'(p)\}^2 - \frac{1}{6} F'(p) \cdot \frac{4(1-p^2)}{p} + \frac{1}{12} \pi F' \{ \sqrt{1-p^2} \}$
(VIII, 267).

T. 376. 16) $\int (e^{r \cos x} - e^{-r \cos x}) \sin(r \sin x) \cdot \sin^{2a} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} (e^q - e^{-q})^{2a} (e^{r e^{-q^2}} + e^{-r e^{-q^2}} - 2) [s > 2a]$ (V, 95).

17) $\int (e^{r \cos x} - e^{-r \cos x}) \cos(r \sin x) \cdot \sin^{2a+1} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a+1} \pi}{2^{2a+1}} (e^q - e^{-q})^{2a+1} (e^{r e^{-q^2}} - e^{-r e^{-q^2}}) [s > 2a+1], = \frac{(-1)^{a+1} \pi}{2^{2a+2}} [(e^q - e^{-q})^{2a+1} (e^{r e^{-q^2}} - e^{-r e^{-q^2}}) - 2r] [s = 2a+1]$
(V, 95).

18) $\int (e^{r \cos x} - e^{-r \cos x}) \cos(r \sin x) \cdot \cos^{2a} x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{a+1} q} (e^q + e^{-q})^a (e^{r e^{-q^2}} - e^{-r e^{-q^2}}) [s \geq a]$ (V, 95).

T. 396. 14) $\int e^{-\frac{q}{x}} \sin p x \frac{dx}{\sqrt{x}} = e^{-\sqrt{2pq}} \{ \cos \sqrt{2pq} + \sin \sqrt{2pq} \} \sqrt{\frac{\pi}{2p}}$ V. T. 268, N. 12.

15) $\int e^{-\frac{q}{x}} \cos p x \frac{dx}{\sqrt{x}} = e^{-\sqrt{2pq}} \{ \cos \sqrt{2pq} - \sin \sqrt{2pq} \} \sqrt{\frac{\pi}{2p}}$ V. T. 268, N. 13.

T. 397. 11) $\int_{-\infty}^{\infty} e^{-x^2} \sin 2px \cdot x dx = p e^{-p^2} \sqrt{\pi}$ (VIII, 516). 12) $\int_{-\infty}^{\infty} e^{-x^2} \cos 2px \cdot x dx = 0$ (VIII, 516).

13) $\int_{-\infty}^{\infty} e^{-x^2} \sin 2px \frac{dx}{x} = -2 \sqrt{\pi} \cdot \sum_0^{\infty} \frac{p^{2n+1}}{2n+1} \frac{1}{1^{n/2}}$ (VIII, 641).

14) $\int_{-\infty}^{\infty} e^{-c^2 x^2} \{ 2q \sin(2c^2 q x) + x \cos(2c^2 q x) \} dx = 0$ (VIII, 670).

15) $\int_{-\infty}^{\infty} e^{-c^2 x^2} \{ 2q \cos(2c^2 q x) - x \sin(2c^2 q x) \} dx = \frac{q}{c} e^{-c^2 q^2} \sqrt{\pi}$ (VIII, 670).

T. 377. 13) $\int (e^{r \cos s x} - e^{-r \cos s x}) \sin(r \sin s x) \cdot \sin p x \cdot \sin^{2a+1} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+3}} (e^q - e^{-q})^{2a+1}$
 $(e^{pq} - e^{-pq}) (e^{r e^{-q s}} + e^{-r e^{-q s}} - 2) [p < s - 2a - 1] \quad (\text{V, 96}).$

14) $\int (e^{r \cos s x} - e^{-r \cos s x}) \sin(r \sin s x) \cdot \cos p x \cdot \sin^{2a} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^a \pi}{2^{2a+1}} (e^q - e^{-q})^{2a} (e^{pq} + e^{-pq})$
 $(e^{r e^{-q s}} + e^{-r e^{-q s}} - 2) [p < s - 2a] \quad (\text{V, 96}).$

15) $\int (e^{r \cos s x} - e^{-r \cos s x}) \cos(r \sin s x) \cdot \sin p x \cdot \sin^{2a} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+3}} (e^q - e^{-q})^{2a} (e^{pq} - e^{-pq})$
 $(e^{r e^{-q s}} - e^{-r e^{-q s}}) \left[\begin{array}{l} 2p > 4a > s, \\ \text{ou } 4a > 2p < s \end{array} \right], = \frac{(-1)^{a-1} \pi}{2^{2a+3}} (e^q - e^{-q})^{2a} [(e^{pq} - e^{-pq}) (e^{r e^{-q s}} -$
 $- e^{-r e^{-q s}}) - 2r] \left[\begin{array}{l} 2p < s < 4a, \\ \text{ou } 2p > s > 4a; \text{ et } p = s - 2a \end{array} \right] \quad (\text{V, 96}).$

16) $\int (e^{r \cos s x} - e^{-r \cos s x}) \sin(r \sin s x) \cdot \sin p x \cdot \cos^a x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{a+2} q} (e^q + e^{-q})^a (e^{pq} - e^{-pq})$
 $(e^{r e^{-q s}} + e^{-r e^{-q s}} - 2) [p \leq s - a] \quad (\text{V, 96}).$

17) $\int (e^{r \cos s x} - e^{-r \cos s x}) \cos(r \sin s x) \cdot \cos p x \cdot \sin^{2a+1} x \frac{x dx}{q^2 + x^2} = \frac{(-1)^{a-1} \pi}{2^{2a+3}} (e^q - e^{-q})^{2a+1}$
 $(e^{pq} + e^{-pq}) (e^{r e^{-q s}} - e^{-r e^{-q s}}) \left[\begin{array}{l} 2p > 4a + 2 > s, \\ \text{ou } 4a + 2 > 2p < s \end{array} \right], = \frac{(-1)^{a-1} \pi}{2^{2a+3}} (e^q - e^{-q})^{2a+1}$
 $[(e^{pq} + e^{-pq}) (e^{r e^{-q s}} - e^{-r e^{-q s}}) - 2r] \left[\begin{array}{l} 2p < s < 4a + 2, \\ \text{ou } 2p > s > 4a + 2; \text{ et } p = s - 2a - 1 \end{array} \right] \quad (\text{V, 96}).$

18) $\int (e^{r \cos s x} - e^{-r \cos s x}) \cos(r \sin s x) \cdot \cos p x \cdot \cos^a x \frac{dx}{q^2 + x^2} = \frac{\pi}{2^{a+2} q} (e^q + e^{-q})^a (e^{pq} + e^{-pq})$
 $(e^{r e^{-q s}} - e^{-r e^{-q s}}) \left[\begin{array}{l} 2p \geq 2a \leq s, \\ \text{ou } 2a \geq 2p \leq s \end{array} \right] \quad (\text{V, 96}).$

T. 431. 20) $\int \frac{\cos q x \cdot l \cos x + x \sin q x}{x^2 + (l \cos x)^2} \frac{\cos^r x}{1 - 2p \cos 2x + p^2} dx = \frac{\pi}{2(1-p^2) l \frac{1+p}{2}} \left(\frac{1+p^q}{2} \right)^r + \frac{\pi}{2(1-p)^2}$

Svanberg, N. A. Ups. 10, 231.

